



# International Abstract of Surgery

SUPPLEMENTARY TO

Surgery, Gynecology and Obstetrics

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JULY 1924

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*Supplementary to*  
**Surgery, Gynecology and Obstetrics**

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## EDITOR'S COMMENT

THE contributions that have been made during recent years to our knowledge of the physiology and pathology of the thyroid gland should serve as a stimulus and encouragement for those who are inclined to feel pessimistic over the progress of medical science. Steinlin's review of the status of the goiter campaign in Switzerland (p. 10) indicates how widely the influence of Marine's studies is being felt and how successfully the administration of iodine is affecting the development of goiter in a region where goiter has been endemic for many years. Plummer and Boothby's report on the results obtained by the administration of Lugol's solution in exophthalmic goiter (p. 10) marks a second chapter which Plummer has predicted will prove as important in the treatment of exophthalmic goiter as the prophylactic administration of iodine is proving in the prevention of simple goiter. Mason (p. 10) also adds a brief report on the value of Lugol's solution while Hyman and Kessel (p. 10) stress the influence and importance of non-specific measures particularly mental and physical rest in the treatment of exophthalmic goiter.

Therapeutic measures for dealing with suppuration in the lungs have received increasing attention of late both by reason of the development of the technique of bronchoscopy under the guidance of Chevalier Jackson and because of the helpful effect secured in some cases by the use of mercurochrome and gentian violet. The value of lipiodol in conjunction with the X-ray for the exact localization and determination of lung pathology a procedure frequently mentioned in French medical journals of late is as yet not definitely determined. Three papers dealing with the problem of lung infection are reviewed in this month's issue of the ABSTRACT: the bronchoscopic treatment of suppurative diseases of the lung by Moore (p. 24), the surgical treatment of bronchiectasis by Archibald (p. 24) and the combined chemotherapeutic and surgical treatment of lung cavities by Geckler, Lovelace, Rankin and Weigel (p. 23). Other abstracts dealing with different phases of this problem will appear in the near future.

The problem of intracardiac surgery, one that has always fascinated the imagination of experimental workers is discussed by Allen (p. 25). The technique which he has developed for per-

forming intracardiac operations opens the way for further advances in this interesting if limited field. Jonnesco's report of the results of treatment in six cases of angina pectoris (p. 19) indicates the possibility of the successful surgical treatment of this condition if carried out sufficiently early.

ABSTRACTS of a number of interesting papers devoted to gastro-intestinal surgery appear in this month's issue of the Journal. From the diagnostic standpoint, Friedenwald, Gantt and Morrison's studies in fractional analysis (p. 10) and Walton's discussion on the differential diagnosis of the urgid dyspepsias (p. 30) are worthy of note. From the standpoint of technique, Fraser and Dott's description of an aseptic method of intestinal anastomosis (p. 41) and Finsterer's discussion of methods of inducing local anesthesia in the abdomen (p. 46) should be mentioned. Sherren's paper on disease of the stomach and its surgical treatment (p. 33), Haberer's discussion of the indications for surgical treatment in diseases of the stomach based on a review of 1,432 personal cases (p. 36) and Cheever's report on gastric carcinoma (p. 35) are helpful contributions from the standpoint of treatment.

Gynecological and obstetrical subjects are less prominent than ordinarily in this month's issue of the ABSTRACT but a few deserve special mention. Winter's report of the results of post-operative radiation in carcinoma of the uterus (p. 43) in the second gynecological clinic at Munich and Wintz's report of the results of X-ray therapy of carcinoma at the Erlangen gynecological clinic (p. 48) concern an important subject. Soh's report of the results of foreign protein therapy in puerperal septicæmia (p. 57) and Thalhimer's report (p. 52) of the results of insulin treatment of toxic vomiting of pregnancy will be noted with interest by the specialist in obstetrics.

A number of other papers of particular interest in other fields of surgical practice should be mentioned. Judd and Scholl's report of the results of surgical treatment of renal tuberculosis (p. 60), Delzell and Lowsley's paper on diseases of the seminal vesicles (p. 62) and Shea's discussion of seminal vesicle involvement as a causative factor in arthritis (p. 62) will interest the genito-urinary specialist and the internist.

# INTERNATIONAL ABSTRACT OF SURGERY

JULY 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Porter C A and Churchill E D Malignant Tumors of the Parotid Gland with Analysis of a Case *Surg Gynec & Obst* 94 xxxiii 336

The authors believe it has recently been established that the mixed tumors are epithelial in nature though there is still uncertainty regarding the origin of the epithelial cells giving rise to them. The usual course of a mixed tumor is relatively benign but instances of a change from a slowly growing tumor of many years duration to a malignant growth are not infrequent.

Metastasis of malignant mixed tumors takes place through the blood stream rather than to the regional lymph nodes. In the authors opinion the characteristics of the cylindroma are suggestive of basal cell carcinoma or adenoid cystic epithelioma. Clinically it resembles the mixed tumors in encapsulation on extraglandular location and a relatively benign slow growth which may terminate in malignant activity with metastases.

There are relatively few reports of primary carcinomata of the salivary glands which can be clearly distinguished from carcinomata arising in mixed tumors. The scirrhous and medullary types are the two most frequently described. The growth is usually very hard and fused with the gland and it invades the cervical lymph nodes early. In further contrast to malignant mixed tumors it rarely metastasizes to internal organs. Delanglade attaches importance to early facial paralysis. Pain is a frequent symptom.

The authors report a case of adenocarcinoma of the parotid region in which during the course of numerous recurrences the preponderance of cell which had undergone differentiation to the basal-cell and hair matrix type caused confusion regarding the proper classification of the tumor. The fundamentally malignant nature of the growth was not recognized until general metastases were formed. Excision of

the tumor was followed by eleven recurrences necessitating many secondary operations during the past fourteen years. The X-ray and radium had been employed at intervals during the course of the disease.  
Elliott C ROBERTSON MD

Durante L The Operative Technique for Complete Excision of the Lymphatic Channels in Epithelioma of the Lower Lip (*Tecnic della completa della vie linfatiche nel lipotelioma*) *del l'abb. 1 f. 1 e) 4 h. 1 f. 1 d. ch.* 1923 viii 01

The lymphatic channels and glands which are commonly controlled in operations for epithelioma of the lip are the submental, the submaxillary and the carotid jugular group. These structures are found either in the subfacial areas of the neck or between the layers of the fascia. Not sufficient consideration has yet been given to controlling in a systematic manner the suprafascial lymphatics that is the glands that lie between the skin and the fascia colli. In this suprafascial area the following layers of tissue occur in the following order:

1. An areolar layer more or less rich in adipose tissue.

2. A lamellar structure made up of the superficial fascia which splits to envelop the platysma myoides.

3. A connective tissue layer closely adherent to the posterior layer of the fascia covering the platysma.

4. Fascia colli.

These four structural planes are furrowed with lymphatic channels and glands which in the presence of a cancerous change of the lip may easily become involved and serve as a route of transmission between the superficial and deep lymphatic glands. This superficial system of lymphatics is always dealt with by the author in operations for malignancy of the lip.

It is known that the lymphatic system of the lower lip is derived from two distinct sources, a

mucosal and a cutaneous source. The submucous system communicates with the submaxillary lymphatic gland whence efferent chains communicate with the carotid jugular group on the same side. The subcutaneous system of lymphatics supplying the outer portion of the lip also communicate with the submaxillary lymph glands but the lymphatics draining the median portion of the lip communicate with the subfascial submental lymph gland that is the glands lying between the anterior bellies of the digastric. The efferent fibers of both communicate with a deep cervical lymphatic chain.

These subcutaneous channels of lymphatics communicate with each other by a rich anastomosis the communication including the submaxillary and the submental glands on the right and left sides of the neck. Therefore a lateral subcutaneous chain of lymphatics on the right side may communicate with the glands of the deep cervical system on the left side by this circuitous route and in structures such as the lip in which the mucosa and skin fuse with each other the lymphatics of the mucosa communicate with those of the skin those of the left with those of the right and the superficial with the deep.

The clinical premises are as follows:

1 Epithelioma of the lower lip situated in the median segment invades first the lymphatic glands of the subhyoid region.

2 Epithelioma situated laterally invades primarily the submaxillary lymphatics.

3 Epithelioma situated to the left of the median line may travel by metastases the lymphatics of the right side and vice versa.

4 Neoplastic glandular involvement is very frequently bilateral.

5 Lymphatic involvement may be present without palpable evidence.

If the intimate relationship between the subfascial and the suprafacial lymphatic systems and the connection between these and the subcutaneous chains of the lateral cervical region are borne in mind the following observations can be readily explained:

1 Following excision of an epithelioma of the lip removal of the subfascial glandular structures recurrence of the malignancy may develop in the suprafacial lymphatics and the glands of the subhyoid region.

2 Metastases of the lymphatics may be manifested in the superficial lateral cervical nodes before it involves the submental and submaxillary structures. Consequently because of the complete intercommunication of the superficial and deep lymphatics and of the bilateral system draining the lower lip it is essential to operate for malignancy to undertake the complete radical extirpation of the lymph vessels in the neck. This precaution counts for the fact that the mere local recurrence has usually diminished. The following figures apply to cases in which no recurrence had developed by the end of three years after operation.

Surgeon	Year	Cures Per cent
Th. Koch	1865	10
B. Broth	1867	24
W. n. w. rt	1874	6
I. rick	1884	3 6
Woerner	1886	38
M. in g	1887	44 5
Frick	1898	60 2
Loos	1900	66
Steiner	1905	4
Serafini	1907	73
Ebel	1908	80 2
Bondsdorff	1908	80 5
Sistrunk	1911	90 3

Sistrunk was able to report such a large percentage of cures because in all of his cases there was a painstaking and complete excision of the various lymphatic systems. The technique commonly employed does not take into consideration the superficial or suprafacial lymphatics. Whatever the type of cutaneous incision the superficial lymphatics are invariably neglected. These structures lie in the substance of the reflected flap.

The author's technique is as follows:

The patient is placed in the recumbent position with the neck hyperextended. An incision of the skin is begun at the angle of the mandible  $\frac{1}{2}$  cm. below the mandibular arch and extended on either side downward along and parallel with the anterior margin of the sternomastoid muscle to the level of the superior border of the thyroid cartilage. A similar incision is then made on the opposite side. The incised area which resembles a horseshoe gives ample operative space. If it is found necessary to remove the supraclavicular glands the incision may be extended down to the clavicle. The cutaneous structure is carefully dissected from the underlying areolar tissue and the flap is reflected downward.

The four layers of tissues which contain channels and glands—the subcutaneous areolar stratum, the superficial fascia, between whose anterior and posterior layers lies the platysma, the connective tissue layer, and the fascia colli—are dissected en bloc. The dissection is begun by undermining the skin to the extent of 1 cm. beneath the mandible in order to include the entire lymphatic area. On the sides the excision is limited along the anterior surface of the sternomastoid muscle; the external jugular vein, the sheath of which is often the site of metastatic lymph nodes can be exposed and by incision of the anterior sheath of the muscle and exposure of the posterior surface the carotid area is inspected. In the substance of the structure to be removed are often found terminal filaments of the cervical branch of the facial nerve. The procedure described therefore produces a transient paralysis of the lip and chin but even the ordinary methods which are less drastic may be followed by this complication. The operation is concluded by removing the resected structure from its base of attachment by means of an incision running parallel with the upper margin of the thyroid cartilage. J. M. S. & R. M. D.

## EYE

Meek S H A Study of the Bacteriology of the Normal and Inflamed Conjunctiva with Special Reference to the Presence of the Streptococcus and Pneumococcus *C d n M 45 J 9 4*  
xiv 216

McKee's conclusions are as follows

1 The normal conjunctiva may harbor pathogenic organisms causing no symptoms  
2 A major surgical operation should never be performed upon the eye without a previous careful examination of the lachrymal fluid for pathogenic organisms

3 For the thorough examination of the normal conjunctiva cultures are necessary

4 Examination by smear alone often gives negative findings in cases in which pathogenic organisms would be easily demonstrated by other bacteriological methods

5 Pathogenic microorganisms such as streptococci and pneumococci are best demonstrated by the use of blood agar plates This method is simple and by means of it the presence of the streptococcus or pneumococcus may be easily demonstrated in from twenty-four to forty-eight hours

THOMAS D ALL N MD

Jackson E Practical Aspects of Irregular Astigmatism *Im J Ophth 9 4 3* 99

One form of irregular astigmatism symmetrical aberration is of great practical importance as illustrated by a case seen by Jackson When viewed through the center of the pupil the posterior pole of the fundus of a myope with detached retina was seen best with a -3 sphere Through the periphery of a widely dilated pupil it was seen best without any lens In a second case vision was improved by a -16D sphere When the pupil was dilated the disk and vessels were seen best without any lens or with a +1D sphere There were no fundus changes indicative of myopia With the pupil dilated best vision was obtained with a +0.50 sphere This was an extreme case of myopia due to nuclear changes

The scissors movement can be explained by the greater refraction of the cornea at one margin of the pupil than at the other

The subjective symptoms of irregular astigmatism are varied and numerous These should be explained to the patient in order to relieve him from anxiety

VIRGIL W SCOTT MD

Kress G H Cysticercus of the Vitreous *Am J Ophth 9 4 3* 18

Cysticercus of the vitreous is a rare condition only five cases having been reported in the United States Kress reports another case which was under his observation from nearly six years until the eye was removed because of serious iridocyclitis The main pathological features of the sectioned eye were inflammation and detachment of the retina round cell infiltration of the iris and secondary

glaucoma The bladder containing the parasite was discovered just behind the lens

VIRGIL W SCOTT MD

White L E An Anatomical and X-Ray Study of the Optic Canal in Cases of Optic Nerve Involvement *1 Of Rh of & La y 201* 924  
viii 1 21

This study was undertaken partially to substantiate the assertions of Van der Hoeve but more especially to determine whether there is any relation ship between the size of the canal and the vulnerability of its contents Conclusions were drawn from the tabulated results of examinations of numerous skulls in which the size shape and position relative to pneumatization were noted and from roentgenograms of the optic canals of all available cases of optic nerve involvement which were compared with those of twenty-five supposedly normal persons Evidence of disease was looked for but was rarely found All X-ray work was done by one man with considerable experience

The position of the patient's head with the face downward should be with the malar bone nose and lower jaw touching the plate and the central ray should be directed straight down The diameter of the canal of 5 mm should be enlarged about 1 mm in the roentgenogram The conclusions arrived at are as follows

The optic canal varies from 3.5 to 6.5 mm and the normal canal is practically 5.5 in diameter and usually round Extensive pneumatization about the canal is usually associated with narrowing When the lesser wing above the canal is more extensively pneumatized than other regions the canal is flattened on top If the region beneath the canal is also pneumatized it becomes oval while in rather rare instances where the bridge formed by the lateral root of the lesser wing of the sphenoid is also pneumatized it assumes a somewhat triangular shape Any irregularity in the contour of the canal from whatever cause produces diminution in its caliber and renders its contents more susceptible to infections from the sinuses surrounding it It seems to be a fairly constant rule that the smaller the canal the more extensive the pneumatization Small canals may be round even though they are surrounded by pneumatic sinuses Therefore the shape while not all important usually indicates susceptibility to infection

The films of the canal are often misinterpreted because of faulty position The image of the canal should always appear in the lower quadrant of the orbit Though the films of only about thirty patients with optic nerve involvement have been studied these indicate that the smaller the canal the greater the danger of permanent loss of vision and the greater the necessity for operation The size of the canals is most valuable in making a differential diagnosis for large canals lead one to look elsewhere than in the accessory sinuses for the cause of the amblyopia

If future cases substantiate the findings it will mean that a canal of 4 mm or less in a case of severe optic nerve involvement indicates the necessity for immediate ventilation of the posterior sinuses to prevent permanent atrophy unless some other definite focus can be found. A 4.5 mm canal gives greater leeway for study and investigation. Optic atrophy is less to be feared. A 5 mm canal would probably recover from almost any acute attack either spontaneously or under local treatment. Then if some focus of infection is found diseased tonsils or teeth for instance it should be removed as a preventive to recurrences.

MANFORD R. WALTZ M.D.

Prizbram H. Giving Sight to Animals Deprived of Functioning Eye. *Am J Ophth* 1924 3: 179

Prizbram reports the work done by students at his suggestion in restoring vision to animals deprived of functioning eyes. Kammerer bred the blind proteus and by exposing it to red light or in light and darkness was able to develop large functioning eyes.

It was found that in low orders of certain vertebrates eyes may be transplanted to the back and after at first degenerating may regain sight. In rats and rabbits with normal behavior and reflexes the retina and optic nerve showed regeneration. Cataractous lenses have been removed from fish and frogs and replaced by fresh clear lenses.

VIRGIN WESCOTT M.D.

Ohly J. H. The Treatment of Intra Ocular Foreign Bodies. *Am J Ophth* 1924 3: vii 23

The method of removing foreign bodies depends upon their location and properties. While X-ray examination is of the greatest help in locating them other methods with oblique illumination the ophthalmoscope and lit lamp must not be neglected. The history is not conclusive.

Non-magnetic bodies are best removed by forceps or hooks. In cases seen a few hours after the injury the foreign body should be removed through the wound of entrance if it lies behind the ciliary body.

VIRGIN WESCOTT M.D.

Finnoff W. C. Lesions Following the Injection of Living Tubercle Bacilli into the Carotid Artery. *Am J Ophth* 1924 3: 81

Finnoff reports the results of injecting clump emulsions of living tubercle bacilli into the common carotid artery of rabbits. Lesions developed in all cases but resulted more quickly and were more severe when large doses of virulent organisms were used. Bovine bacilli were very virulent. The animals died before the eye condition had run its course. The average incubation period was six days.

The first changes small pupil and iris hemorrhage were due to irritation. Usually four days after the inoculation the iris became thickened in a

triangular form very fine blood vessels became visible on the surface of the ridges and there was a serous exudate on the lens capsule at the pupillary margin. The nodules appearing on the iris increased in size and remained vascular. In the severe cases a haziness of the cornea was noted a few days after the iris and continued until the entire cornea became opaque and vascular as in interstitial keratitis in man. Conjunctivitis and episcleritis were late manifestations. Chorioiditis was found in all cases in which the media were clear. In three animals it was possible to follow the process from inflammation to atrophy. In most of the cases there was a severe uveitis. Tuberculosis of the vessels was noted in only one case. A tubercle was found in an extraocular muscle.

VIRGIN WESCOTT M.D.

## EAR

Bunch C. G. Functional Hearing Tests in Normal Cases. *A. O. I. R. I. & Lary. G. I.* 1914 2: 174

The author made a study of so-called normal hearing in 164 persons selected from five groups of university students.

The Rinne, the Weber, the bone conduction spoken and whispered voice, the upper limit for air and bone conduction with the monochord and the audiometer tests were made in every case. The conclusion drawn is that the majority of persons have an auditory defect of some type. The decrease in acuity most frequently found is for tones between 2500 and 3100 d. v. In more advanced cases this defect expands to include the tones from 1000 to 4000 d. v. often without apparent effect upon the upper limit of tonality. There is a distinct correlation between this defect, the loss of acuity for the whispered voice, and a decrease in perception time by bone conduction. Seventy-three per cent of the persons tested had decreased bone conduction and in 56 per cent this was greater than three seconds.

The upper limit of audibility is well under 25000 d. v. Determinations made with the monochord showed a higher correlation with the other clinical tests than did those made with the Calton whistle and the Koenig cylinders.

JAMES C. DE SWEET, M.D.

Dupuy H. Sixth Nerve Paralysis in Acute Otitis Media and its Complications. *S. A. M. J.* 1914 2: 213

Dupuy reports a case of sixth nerve involvement originating from a pathogenic cause not stressed by Gradenigo. The condition was transmitted along a different anatomical pathway.

The patient was a boy 12 years of age who developed an acute otitis media which ruptured one week later and was followed by a profuse otorrhea. Three weeks after a mastoidectomy the patient was dismissed from the service with his wound healed. Two days after his discharge he was readmitted to

the hospital suffering with severe hemicrania nausea and vomiting. The urine showed a few hyaline and granular casts. The white blood count was 13,650. Two days later he was semicomatose and had slight convulsive movements. His pulse continued slow.

By craniotomy the brain was exposed over the tegmen antri and tympani. The dura over the whole temporosphenoidal lobe appeared healthy and without the slightest sign of stalk. An incision in the direction of the apex of the petrous bone directed inward and forward brought forth a gush of foul pus and a large amount of blood. In all about 2½ oz. of pus were evacuated from the abscess cavity. The hemorrhage was controlled by packing the cavity with gauze strips.

The patient regained consciousness before leaving the operating room. The next morning his mental state was excellent and his pulse oscillated between 52 and 80. The packs were removed on the second day and the patient gradually recovered. The infection was due to staphylococci.

JAMES C BRASWELL M.D.

**Torok B.** The Treatment of Postoperative Cavities of the Mastoid Process with Rubber Balloons.  
*A. O. L. R. H. of L. a. y. 1924 XXXIII 25*

Because of the long tedious and painful after treatment following a radical mastoid operation experiments were made in 1913 with rubber balloons instead of packing in the treatment of the wounds. In eighty cases balloons were used exclusively. The balloons are soft and pliable and when inflated in a cavity conform perfectly to its shape and adhere everywhere to its walls.

After the operation the cavity is carefully cleansed and all splinters of bone are removed. Stacks plastic flap operation is done. The flap is made very thin so that it will easily conform to the walls of the bony cavity. The sutures are removed on the fourth day. On the fifth day the packing is removed and the first rubber balloon inserted.

A small piece of gauze is placed loosely in the tympanum and the sterilized folded balloon anointed with glycerine is pushed into the cavity by means of forceps. The rubber tube of the balloon is then connected with a Record syringe carefully inflated until the balloon fills the entire cavity loosely and then grasped with an artery clamp. After this has been done a bandage is applied. The next day the balloon is removed and the cavity cleansed with normal saline solution. In most cases the balloon is reintroduced. It is left out for a day only when there is a great deal of secretion. After the balloon has been inserted for six or eight consecutive days there is a well formed cavity with white smooth walls and signs of beginning epithelialization. The cavity is then left open. The secretion being removed daily by gently irrigating it with saline solution and dusting it with boric acid. The cavity is never cleansed with gauze as this destroys the new epithelium.

The author has employed this procedure for both chronic and acute mastoiditis.

JAMES C BRASWELL M.D.

**Emerson F. P.** The Causes of Persistent Otorrhea After a Simple Mastoidectomy.  
*An. O. L. R. H. of L. a. y. 1924 XXXIII 214*

From the patient's point of view persistent otorrhea following a mastoid operation means an unsuccessful result. The surgeon feels or should feel that there has been some fault in his operative technique or dressing. The causes of a persistent otorrhea are classified by the author as follows:

1. Lack of surgical judgment in the after-care.
2. Too early removal of the mastoid cortex before infection has been limited by a leucocytic barrier. This was more frequent before the days of the X-ray than at present. Rarely is it necessary to interfere surgically before a week from the time of an early incision of the membrana tympani.
3. Incomplete evanescence especially of the deep layer of posterior canal cells.
4. Too active surgery in the region of the aditus which delays the walling off of the middle ear and exposes the mastoid cavity to re-infection.
5. Failure to recognize the origin of the infection such as infection of the nasal sinuses. Re-infection of the mastoid may occur from such sources.
6. Arrest of tissue repair due to poor resistance of the patient.
7. Osteomalacia.
8. General systemic conditions due to syphilis or tuberculosis.

JAMES C BRASWELL M.D.

## NOSE AND SINUSES

**Simpson H. L.** A Method of Holding the Septal Membranes in Apposition After a Submucous Resection Without the Use of Packing. Description and Demonstration of the Instruments and the Method of Use.  
*J. M. Soc. 1924 XX 164*

Simpson presents a method for holding the septal membranes in apposition after a submucous operation by transfixing the membranes in front and then further back with a straight needle. The illustrations accompanying the article show the technique employed.

There is a No. 9 straight needle which is oval on cross section and sharp only at the point. An introducer is shown into which the needle fits. There is also a grooved and forked director which guides the needle after the first transfixion and turns the mucous membrane at its end to an obtuse angle with the longitudinal diameter of the needle so that the needle point comes out on the side of its insertion. The instructions for accomplishing this are as follows:

When the point is slightly engaged in the opposite membrane (first transfixion) the needle introducer is placed over the eye end with the thumb and fingers of the right hand. The grooved forked director



held in the left hand is passed along the septum in the same naris from which the needle started. The turned and forked end is passed beyond the end of the needle which is distinctly felt through the mucosa and slightly withdrawn until the angulation at the fork is engaged over the submerged point. Slight opposing lateral pressure is made between the distal ends of the director and introducer held in the two hands. The proximal or handle ends are now brought nearly to a parallel and both are gently swung over just beyond the median plane of the nose and the needle is pushed through. This last move directs the point between the posterior segment of the resected bony septum and the middle turbinate and back along the side from which it started thus completing the transsection. The needle is left in for four days.

The advantages claimed for this procedure are: (1) greatly reduced postoperative bleeding; (2) practically complete elimination of pain and discomfort following the operation; (3) elimination of the possibility of occlusion of the sinus openings by engorgement and edema of the soft parts of the lateral nasal wall; and (4) reduction of the chance of ear complications. **Otto M. Rott M.D.**

**Pollock H. L.** Intranasal Implantation in Atrophic Rhinitis. *Am. J. Surg.* 41: 1-4, 1951.

In the treatment of atrophic rhinitis the author uses implants from the nasal septal cartilage of a donor. An incision is made in the mucoperichondrium of the septum and the membrane carefully elevated, care being taken not to tear the membrane as this defeats the purpose of the operation. The cartilage transplant is as large as possible and is brought into contact with as much of the elevated membrane and septum as possible in order to insure proper nourishment. The incision is closed with a small suture. It is preferable to operate upon only one side of the nose at one operation and then wait two or three months before operating upon the opposite side.

In cases which have been under observation for three years the implants are still of approximately the same size as when first implanted. **J. L. C. B. S. M.D.**

**G. Ch. E. and W. H. H. G.** Intranasal Roentgenography of the Sphenoidal Sinus and Ethmoidal Cells (Roentgenography of the Sphenoidal Sinus and Ethmoidal Cells). *Am. J. Surg.* 41: 1-4, 1951.

The authors describe their apparatus for intranasal roentgenography which they carry out under local anesthetics. This method permits examination of the sella turcica, the sphenoidal sinus, the juxtaposed ethmoidal septum and the turbinates.

The basal part of the occiput, the hyoid and the anterior part of the atlas appear behind the

sphenoidal sinus. A clear view of the ethmoidal cells is also obtained.

The value of such a method of observation is evident; it reveals the details of pathological changes in the different parts and the topographical relationships prior to operation. **W. A. Breen M.D.**

## PHARYNX

**MacCreedy P. B. and Crowe S. J.** Tuberculosis of the Tonsils and Adenoids. A Clinical and Roentgen Ray Study of Fifty Cases Observed for Five Years After Operation. *Am. J. Surg.* 41: 1-4, 1951.

MacCreedy and Crowe discuss the subject of tuberculosis of the tonsils and adenoids from the standpoint of the bacteriological examination of these structures after the removal in a series of 326 cases. This routine examination resulted in the discovery of tuberculous tonsils or adenoids in 738 cases. Eighty-five patients had tuberculous glands of the neck as proved by microscopic examination of an excised gland, but in only forty-six of these was it possible to demonstrate an associated tuberculo-adenitis of the tonsils or adenoids. In ninety-two there were no general or local manifestations of tuberculosis. The last group mentioned applied for treatment on account of discharging ears, frequent colds or attacks of tonsillitis, a tuberculous lesion was not suspected until the excised tonsils or adenoids were examined microscopically.

In order to determine the ultimate result in cases of apparently primary tuberculo-adenitis of the lymphatic nodes in the throat the authors made a clinical and roentgen ray study of fifty such cases. Forty-five have been under observation for five years or longer and ten for at least two years. In thirteen investigations the following questions were so given:

1. Will these patients ultimately develop clinical evidence of tuberculosis in the cervical or mediastinal glands in the lungs or elsewhere in the body?

2. When tubercles are discovered in the tonsils on histological examination and no clinical manifestations of the disease are evident on physical examination, should it not be the prerogative of the child or the parent to have it removed?

3. Is it necessary to withdraw the child from school or send the adult to a sanatorium in order to improve the general physical condition and to educate the patient to conform to the rules for recovery from tuberculosis?

4. Does the discovery through histological examination of tubercles in the tonsils or adenoids indicate that the already widespread distribution of tubercle bacilli or may we assume that the infection is local and so it produces no local symptoms of importance and may be ignored?

5. Is the roentgen ray evidence of tuberculosis in the lungs or the mediastinal glands? If suspicious lesions are found do they progress or regress during a five year period of observation?

6 Has the use of ether anaesthesia been determined?

7 Do children with a positive reaction to the tuberculin test at their first examination prior to operation and in whom tuberculous tonsils or adenoids are found when the excised tissues are examined histologically have a negative reaction at any time subsequent to the operation?

The postoperative observations may be summarized as follows:

1 Tuberculosis of the cervical lymph glands developed in only two patients: eighteen and three months respectively after operation.

2 Tuberculosis of the mediastinal lymph gland as determined by means of the roentgen ray developed in three patients: five years, three years and six months respectively after the operation.

3 Tuberculosis of the lungs diagnosed by means of the roentgen ray developed in five patients two years after the operation. In only one was there clinical evidence of infection.

4 Tuberculosis of the bones and joints developed in two patients: one and one half and four and one half years after the operation.

5 In ten of twenty two cases followed, no roentgenological or clinical evidence of a mediastinal or lung lesion has been found during five years of postoperative observation. In six cases the enlargement of the mediastinal glands or the evidence of a lung lesion shown in roentgenograms taken soon after tonsillectomy has entirely disappeared. In the remaining six cases the roentgenogram indicate that the lesions in the chest have progressed, but in none of them has there been fever or cough or other evidence of clinical tuberculosis.

6 Latent tuberculous infection of the tonsils, adenoids or cervical or mediastinal glands is not a contra-indication to the use of ether anaesthesia.

7 Tuberculous infection of the tonsils and adenoids disappeared after operation of little significance.

8 Tuberculosis of the tonsil usually a bovine bacillus infection. This conclusion is based on the age incidence (over 50 per cent of the subjects were less than 10 years of age), the frequency of involvement of the cervical and mediastinal lymph glands, the strikingly low incidence of pulmonary, intestinal or other complications during the five to ten year period of postoperative observation, and the growth appearance and excellent general physical condition of these children in spite of the roentgen ray evidence of tuberculosis of the mediastinum. It is possible that such an infection of the lymphadenoid tissue in the throat if not complicated by frequent secondary infection is of value from the point of view of immunity.

9 When tubercles are found in the tonsil on histological examination the infection is already widespread in the cervical and mediastinal glands and probably also in the mesenteric glands.

10 In such cases the removal of the tonsils and adenoids is of value because it reduces the secondary

infection but there is no evidence that operation on the throat will remove the only tuberculous focus in the body.

11 Tuberculosis of the tonsils or adenoids is never recognizable from the gross appearance before operation unless there are superficial ulcerations secondary to an open pulmonary lesion. When the lesion is discovered microscopically it is probably advisable not to alarm the patient's family to stigmatize the patient as tuberculous or seriously to interfere with his ordinary routine duties since the majority of such subjects will probably never have clinical symptoms of the disease. Otto M. Rorr MD

Lewis E R. Fundamental Considerations Underlying Roentgen Therapy of Tonsils. *A. O. I. Rh. I & La.* 501 924 xv 195

Lewis is of the opinion that some of the arguments favoring roentgen ray therapy of tonsils are misleading and dangerous as the knowledge of some practitioners and of patients relative to physiology is not sufficient to protect them against misconceptions.

The object of X ray treatment is the destruction of lymphoid tissue. In the author's opinion it causes destruction of surrounding tissue and of the lymphatic structures below and beneath the tonsil.

Large size of the tonsil does not necessarily indicate disease; often apparently normal tonsils are large. The tonsil serves as a protector against infection in the same manner as the deeper cervical lymphatics and its destruction in the absence of definite evidence of disease is unwarranted. Frequently the tissue becomes enlarged to take care of a temporary infection.

The employment of such a powerful agent as the X ray by those unfamiliar with the physiological and pathological fundamentals of the area in which they are working is dangerous.

JAMES C BRASWELL MD

## NECK

Christopher F. The Surgical Treatment of Lateral Cervical Fistulae. *S. G. G. & Obst.* 924 x 339

The author calls attention to the important work of Wenglowski on this subject which was published in 1912 and has been frequently overlooked by recent investigators. The work has brought into discard the branchogenic theory of origin of lateral cervical fistulae. In his investigation of median and lateral cervical fistulae Wenglowski studied seventy-eight embryos ranging in length from 2 to 49 mm. Serial sections were made of these, and from the sections wax plates were made which were built up to form large wax models. Serial sections were made also of 147 child and fifty-nine adult cadavers. In addition Wenglowski studied twenty-one cases of neck fistulae or cysts. Among his conclusions were the following:

1 The buccal clefts or grooves in man are not open.

2 The branchial apparatus cannot leave remnants in the neck below the hyoid

3 The thymus originates from the third pharyngeal pouch in the form of a long canal running obliquely from the lateral pharyngeal wall to the sternum where the characteristic thymus substance begins to develop

4 The vestiges of the thymic duct may change into a lateral cervical fistula or cyst

5 The lateral thyroid lobes also have a short canal which disappears early. It is possible that like the thymic duct this canal also may persist and form fistulae and cysts

The fistulae may be so large that crumbs of bread etc. may pass through them from the mouth. Attempts at treatment by the injection of chemicals and by electrolysis have not been successful. Radical surgical extirpation is the only sure method of effecting a cure

The various operative procedures are described in detail and shown by illustrations. The article is concluded with the report of a case operated on successfully by the von Hacker method and with a list of the more important articles on lateral cervical fistulae

Royster H A. Tumors of the Carotid Body. *Schiff J* 1924 196

Royster reports a case in which a carotid tumor that had been present for several years was removed and the common carotid artery and both of its divisions were ligated. There has been no recurrence in more than three years. The pathological diagnosis was parathylioma. The common carotid artery ran through the tumor.

The carotid body has been known since 1743 when it was first described by von Haller. In 1862 Luschka noted its constant occurrence and first described its microscopic appearance. Riegner in 1880 was the first to remove a tumor of the gland and to call attention to the malignant tendency of such growths. Up to 1922 more than ninety cases had been reported. In spite of this the etiology, histology and symptoms are still more or less obscure.

The function of the carotid gland is not known. Its juice will kill a rabbit in a few minutes and small doses will depress the vascular system. Bilateral removal of the gland has caused glycosuria and fatal cachexia. Undoubtedly it belongs to the sympathetic ganglia.

As far as is known the diseases consist only in the formation of tumors peculiar in structure and uniform in type. The neoplasms must be regarded as benign as they are encapsulated and of slow growth and do not metastasize. Recurrences however are not uncommon. Primary sarcoma and carcinoma are occasionally seen. Pathological interest centers around the specific tumor cells the diagnosis of which is still a matter of dispute.

Pre-operative diagnosis of tumor of the carotid body is rare. The following summary of the signs

given by Klose in a recent article emphasizes the points essential for the diagnosis

1 Location at the bifurcation of the common carotid

2 Good lateral mobility with limited vertical mobility

3 Ovoid form a superficially uneven surface and a firm elastic consistency

4 Expansile pulsation and a systolic bruit both of which disappear after compression of the common carotid

5 Anterior arching of the wall of the pharynx and paralysis of the vocal cord

6 Occasional narrowing of the pupil on the distal side

7 Slow growth and protracted duration

8 Absence of pain on palpation

According to Cohn the conditions to be differentiated from carotid tumors are lymphosarcoma metastatic carcinoma of the lymphatic glands aneurysm gumma tuberculous cervical glands and aberrant thyroid.

In the treatment early and complete removal even at the expense of the large vessels seems advisable. The operation may be done in two stages according to Halsted's plan by first ligating the common carotid artery and then waiting for several days before extirpating the growth. To date no case treated successfully by medication or radiation has been recorded. CLAYTON F ANDERSON M.D.

Wood C C R. A Note on the Directoscope. *J. Laryngol. & Otology* 1924 44 4

The directoscope is an instrument designed by Haslinger of Vienna for the direct examination of the larynx. It was introduced about a year ago. In its use the anterior surfaces of the vertebral bodies on a level with the posterior surface of the cricoid cartilage in the hypopharynx are employed as a fixed point for counter pressure to expose the larynx by pressing forward the base of the tongue.

The instrument may be employed under cocaine anesthesia and with the patient in the sitting position and can be so fixed in place that both of the examiner's hands are left entirely free. It is a simple instrument which is portable compact and moderate in price. It is made by Peiner of Vienna and costs in Vienna about \$7.

In the presence of post-cricoid growth its use is contraindicated. WILLIAM B. STARK M.D.

Spencer F R. The Diagnosis, Differential Diagnosis and Prognosis of Laryngeal Tuberculosis. *Am. J. Rhinol. & Laryngol.* 1924 33 63

Green J B. The Electrocautery in the Treatment of Tuberculosis. *Am. J. Rhinol. & Laryngol.* 1924 33 103

SPENCER states that primary laryngeal tuberculosis is so rare that it is scarcely worth consideration.

The subacute secondary type is more frequent than the acute and under proper treatment for the pulmonary and laryngeal disease will usually pass

into the chronic stage. In such cases there is hoarseness and the posterior wall of the larynx shows moderate involvement.

The chronic type which is the most common is characterized by infiltration with a decided tendency toward fibrosis. The patient may complain of a dry throat and hoarseness and the disease may show little tendency to extend to other parts of the larynx.

Slight huskiness of the voice is one of the very early symptoms. The disease is not continuously progressive as weeks and months may go by without marked changes. With greater involvement of the larynx there is constant hoarseness. In the beginning tuberculous ulcers are usually superficial and have irregular edges. Later they may be deep but do not have the punched-out edges so often seen in syphilis. (Edema may be an early symptom but as a rule occurs late.)

The different parts of the larynx are usually involved in the following order: (1) the arytenoids (2) the interarytenoid region (3) the vocal cords (4) the ventricular bands (5) the epiglottis.

GREEN states that the electrocautery relieves pain effects a cure and is suitable for almost any type of lesion. No attempt is made to remove all of the diseased tissue as in cases of malignant growths the purpose being rather to stimulate the formation of new blood vessels with later development of scar tissue.

The chief advantage of the use of the electrocautery is that it gives a hopeful prospect of healing the lesion and restoring the natural voice. It is not indicated in late stages of the disease when there is very extensive involvement of the chest.

In the use of the cautery Green follows the method of Wood. The larynx is anesthetized with an applicator dipped in cocaine flakes. Three applications are made at intervals of several minutes. Ulcerations require superficial cauterization with a knife. Infiltrations except within the larynx proper require needle punctures. It is best to make only three or four punctures at one sitting. Following the cauterization the patient should remain absolutely silent for at least a week. Cracked ice held in the mouth at frequent intervals for several days following the use of the cautery seems to lessen the reaction.

JAMES C. BRASWELL, M.D.

MacKenty J. E. The Operative Treatment of Cancer of the Larynx. *J. La. y. col. & Oil* 1924, x, 12, 67.

The author divides the surgical period in cases of cancer of the larynx into three stages: the preparatory operation, the operation, and the after treatment.

**The preparation.** During the week before operation three colon irrigations are given at two-day intervals. The first one is preceded by castor oil. The patient should come to operation with an empty and clean colon. During this week the diet should be low in protein.

**The operation.** A combination of local and general anesthesia is preferable. There is a distinct advantage

in laying bare the larynx and the first and second tracheal rings under local anesthesia.

The T incision is used. The dissection is carried backward until the larynx and trachea are skeletonized. When hemostasis is complete and all vessels are tied a general anesthetic is administered. The trachea is cut across just below the cricoid or lower if necessary care being taken that no blood enters the lumen of the tube. One or two drops of 50 per cent cocaine injected between two rings in the trachea before it is divided will allay cough. The larynx is lifted forward and the posterior wall of the trachea is incised down to the oesophageal wall. A rubber tube which fits snugly into the tracheal lumen is inserted into the trachea to a depth of about 2 in. This acts as a tracheal extension, turns back the blood, and enables the anesthetist to continue the anesthesia without being in the way.

The larynx is separated from the oesophagus from below upward to a point behind the arytenoids. It is then allowed to fall back into position and the thyrohyoid membrane is divided. In this manner an opening into the hypopharynx is made just below the attachment of the epiglottis. Before this is done the anesthetist sucks out all the secretion from the mouth and nasal cavity and paints the cavities with a 2 per cent solution of mercurochrome. The edges of the opening in the thyrohyoid membrane are grasped and held apart. A yard of folded gauze 2 in. wide is packed into the hypopharynx and upward until it fills the hypopharynx, the pharynx and the mouth. At this point a careful inspection is made of the growth. If it is found entirely intrinsic the larynx is removed by cutting as closely as possible to the superior border of the thyroid cartilage. The opening thus made into the hypopharynx is small and lends itself better to successful repair. If the disease has approached the top of the laryngeal box or has involved the arytenoid more tissue is sacrificed even to the removal of the anterior hypopharyngeal wall adherent to the posterior surface of the larynx.

Just before the last stitch is tied in the closure of the hypopharynx the anesthetist removes the gauze packing through the mouth and again cleanses the pharynx and mouth by suction and paints them with a solution of mercurochrome. A feeding tube of a size which will pass through the nose without undue pressure is then introduced through the more open side. When its point appears in the oesophagus beneath the untied stitch the surgeon directs it into the oesophagus to a depth of 6 or 8 in. The point of exit from the nose is carefully marked and the tube secured to the face.

The last stitch is then tied. If the amount of tissue permits it a second layer of stitches is placed over the first in the hypopharyngeal closure. No plain gut is used.

The trachea is anchored to the skin of the neck by two or three mattress sutures passed around a ring brought out about 1 in. or more from the edge of the wound and tied on small perforated lead

disks. These steady the tracheal stump in the wound and relieve the strain upon the stitches which are to unite the skin edges with the mucous membrane of the trachea. It is essential to obtain a primary union at the intersection of the two lines of the T.

*After treatment.* The drains are left in position for from five to seven days if possible. Cleansing of the wound is begun about the third day. A suction apparatus is attached to one end of the double tube in each drain and saline solution gently introduced through the other end. The flow is continued until the wound is clean. Provision should be made for ample drainage. Any well balanced diet which can be reduced to a fluid or semi solid state may be given.

JAM S C BRASWELL M.D.

**Steinlin.** The Status of the Goiter Campaign in Switzerland. (St. d. de Kr. pib. kaempf. g. d. r. b. hw.) *Schweiz. Ztsch. f. G. d. h. i. pfl.* 1931, 456.

The systematic campaign against goiter can be successful only when a regular supply of iodine is made available to all. Iodine is necessary for life; it is contained and deposited in small amounts in an albuminous compound in the thyroid gland and is present in still smaller amounts in other organs. It plays a very distinct rôle in the body economy. In regions where goiter is common the foodstuffs and air are deficient in iodine and this deficiency causes a hypofunction of the thyroid and possibly also of other glands. The deficiency can be remedied by giving iodine in tablet form or adding it to the food.

An iodized sodium chloride is made which contains 0.5 gm of iodine per 100 gm. If the daily consumption of salt is calculated as 10 gm, only 0.5 gm of iodine is taken which is far below the maximal dose.

The health authorities in the cantons of St. Gall and Appenzell report good results from the use of this iodized salt. Ten cantons and five half cantons in Switzerland are using the cooking salt prophylaxis; only nine cantons and one half canton do not use it and of these only two or three may be considered as having a low incidence of goiter.

The results of the sodium chloride treatment will be noticed chiefly in future generations. The Goiter Commission recommends the administration to school children of so-called school tablets, one a week for a year and then one from eight to twelve times a year during the following years. This treatment causes the disappearance of existing goiter.

Statistics held upon 44,500 school children in the cantons of St. Gall showed that only 6.4 per cent were free from goiter; 31.7 per cent had a palpable thyroid gland; 39.8 per cent had a soft struma; 1 per cent had a nodular struma; and 6.9 per cent had a well-defined goiter.

The author believes that with an effective campaign the disease, an endemic affliction, can be wiped out in Switzerland. While there is also the possibility that the number of cases of so-called Basalows disease will be increased in what a non-

non goitrous regions. Basedow's disease which is curable does not compare in importance with hypothyroidism and endemic deaf mutism now prevalent. The latter have been responsible also for many cases of goiter heart. In Basedow's disease iodized calcium chloride is contraindicated. In the author's opinion the sale of iodine preparations should be restricted to doctors' prescriptions.

In the discussion of this paper SILBERSCHMIDT reported the good results that followed the treatment of goiter over a period of years in a technical school for women. Chocolate tablets containing 5 mgm of iodine were given girls between 15 and 21 years of age. Soft goiters disappeared but Silberschmidt warned against drawing conclusions too early.

GLASS (Z)

**Hyman, H. T. and Kessel, L.** Studies of Exophthalmic Goiter and the Involuntary Nervous System. V. The Course of the Subjective and Objective Manifestations in Fifty Unselected Patients Observed Over a Period of Two Years in Whom No Specific Therapeutic Measures Were Instituted (Spontaneous Course). *Arch. S. t.* 94, 49.

The cases reviewed showed a marked progressive tendency toward amelioration of the objective manifestations of exophthalmic goiter as gain in weight which compared favorably with that in cases given specific therapy and in the first year a progressive decrease in the basal metabolism.

Subjective recovery was not complete in the sense that there was persistence of some of the symptoms. However the latter did not interfere with economic rest and severe incapacitating exacerbations became infrequent.

ARTHUR L. SIEFF, M.D.

**Mason, E. H.** The Use of Lugol's Solution in the Treatment of Exophthalmic Goiter. *C. d. W. A. J.* 924, 2 v. 2.

The remarkable results recently obtained with Lugol's solution (10 per cent potassium iodide 10 per cent) in exophthalmic goiter favor the contention that Graves' disease is an intoxication with an abnormally formed chemical complex which is possibly an imperfectly iodinated thyroxine molecule. The introduction of iodine into the system tends to enable the thyroid gland to manufacture the thyroxine complex normally stopping or at least decreasing the secretion of an abnormal product. According to this theory Graves' disease is a dysthyroidism.

By the use of Lugol's solution in true cases of exophthalmic goiter the pulse rate and basal metabolism are lowered to normal in a very few days. This improved state can be maintained with small doses. The exophthalmos disappears very slowly but there is a tendency for the exophthalmos to recede with the decreasing pulse rate. It is not yet known whether a complete cure can be obtained with this treatment.

ARTHUR L. SIEFF, M.D.

Plummer H S and Boothby W M The Value of Iodine in Exophthalmic Goiter *J Iowa St Med Soc* 19 4 xiv 66

A preliminary report of the value of iodine in the treatment of exophthalmic goiter was made by Plummer at the meeting of the Association of American Physicians in June 1923

Liquor Iodi compositus or Lugol's solution was used as the iodine preparation because it is an aqueous solution of iodine (5 per cent) and potassium iodide (10 per cent) and therefore provides a large amount of iodine loosely combined with potassium. It has been found that on the average the optimal dose is 10 drops of Lugol's solution well diluted with water and followed by half a glass of water. Certain patients who did not react to 5 drops reacted to 10 drops. Some of the most rapid reactions were observed when 10 drops were given three times a day. At the present time the routine dose is on the average moderately severe case 10 drops once or twice daily. When there is a critical gastro-intestinal or mental crisis this amount is given three or four times a day for a few days and then once or twice a day. If the drug is not tolerated when administered by mouth it is given in similar doses by rectum. Rectal administration however has been found necessary for a few days only for patients with severe gastro-intestinal crises and constant nausea and vomiting. As soon as the vomiting is controlled the solution is given by mouth.

Ten cases are reported in detail. In one case four metabolic tests made during July and August ranged between +40 and +50 per cent and oligations were done but Lugol's solution was not employed. After three months rest at home following the ligations the patient returned to the Clinic with the basal metabolic rate on three observations during the first week ranging between +60 and +62 per cent. Lugol's solution was then begun 10 drops being given three times a day. On the 15th day after the iodine was begun the basal metabolic rate was +39 on the ninth day 36 on the 14th and 34 on the 17th and on the 18th day +9. Thyroidectomy was then performed with entire safety.

A conservative estimate of the number of patients with exophthalmic goiter who have been treated with Lugol's solution at the Mayo Clinic is 600. No patient with unquestioned exophthalmic goiter has been made worse by the Lugol's solution. On October 19 a count was made of the patients then in the hospital under treatment for goiter in order to estimate the relative frequency of a beneficial effect from the administration of Lugol's solution. There were twenty patients with adenomatous goiter with or without hyperthyroidism who did not receive Lugol's solution. Five patients possibly having adenomatous goiter with hyperthyroidism were given Lugol's solution because exophthalmic goiter could not be definitely excluded. Of these one was benefited definitely and three slightly. In one case the data were not sufficient for an opinion. Of fifty-six patients with definite exophthalmic goiter

who received Lugol's solution thirteen did not have a sufficient number of metabolism tests to warrant an opinion. Of the forty-three others sixteen (37 per cent) showed marked and prompt improvement after the administration of Lugol's solution fourteen (32 per cent) were definitely benefited and eleven (26 per cent) benefited only slightly as after hospitalization and rest and only two (5 per cent) were not affected. From this survey it seems probable that approximately two-thirds of the patients with exophthalmic goiter will be greatly benefited, one-fourth will be slightly benefited and the remainder or about one patient in twenty will not be demonstrably benefited. The probability that the iodine will do harm is less than 1 in 600.

As has been reported by Pemberton the mortality rate in 1921 following surgical procedures for exophthalmic goiter had been reduced at the Mayo Clinic to 1.7 per cent on the basis of the number of patients operated upon and to less than 1 per cent on the basis of the number of operations. In the main Cole was correct when he attributed this low mortality rate to surgical technique instead of to the pre-operative treatment and medication. That factors other than surgical technique affect the surgical mortality indirectly and in a complicated manner is borne out by the following facts.

In 1918 sixteen patients with exophthalmic goiter died before operative procedures were possible. In 1919 eighteen died in 1920 fifteen in 1921 ten and in 1922 sixteen an average of fifteen during each of the last five years. Before this year no drug was known to exert a material influence on the natural course of the disease and there was none which could be administered with the expectation that it would avert impending death. During nine and one-half months of the present year apparently because of treatment with Lugol's solution only four patients died before surgical intervention was possible. All who have observed the improvement in patients with exophthalmic goiter following the administration of this drug are convinced of its value in this disease. Not only has the pre-operative mortality rate been reduced but the patients have been accepted later by the surgeons as operative risks. In spite of the acceptance of these cases which in the beginning were poor operative risks the surgical mortality rate and the frequency of the typical postoperative hyperthyroid reaction resulting in death has progressively decreased.

Plummer and Boothby emphasize the dangers of indiscriminate use of iodine in the treatment of cases of goiter. Their experience confirms that of Kocher in a certain definite but restricted sense since they have repeatedly seen patients with adenomatous goiter with ut hyperthyroidism rendered hyperthyroid by the administration of iodine. Their recommendation for the use of iodine is limited to true exophthalmic goiter exhibiting the characteristic symptoms described elsewhere by them and accompanied pathologically by diffuse parenchymatous hypertrophy.

Roth O The Dangers of Iodine Therapy with Special Consideration of Modern Attempts at Goiter Prophylaxis (U ber die Gefahr der Jodtherapie unter spezieller Berucksichtigung der modernen Bestrebungen d. K. opfrophyl.) *Schweiz med Wchsrh* 1923 111:865

On the basis of thirty cases of iodism following the use of iodostearin Roth warns against the indiscriminate prophylactic treatment of goiter. Of particular interest is the fact that the majority of the patients were given only very small single and total doses of the iodostearin but developed typical symptoms of thyroidism and some of them even an iodine goiter (Kocher).

One patient had pronounced symptoms of iodine goiter after three months use of the iodized so-called full salt. In another case of severe iodine goiter produced by the iodostearin tablets permanent arrhythmia with cardiac enlargement resulted.

Kocher (Z)

Patel Exophthalmic Goiter Operated upon by Jaboulay Twenty six Years Ago by Bilateral Section of the Sympathetic Nerve (Got exophthalmique p. p. Jaboulay il y a 26 ans par section bilatérale du sympathique.) *Lyon ch* 1924 21:81

The patient a woman developed exophthalmic goiter at the age of 25 years. Medical treatment was without effect and during the menopause the symptoms became aggravated. In her forty seventh year of age when the signs of the disease were very marked Jaboulay sectioned the cervical sympathetics. Rapid improvement resulted. After two months the heart and respiration had become quiet the pulse rate was 60 and the dyspnoea and nervousness had ceased. Fourteen years later the neck was normal the pulse rate was 80 and regular there was no palpitation or tremor slight dyspnoea was noted only when the patient mounted the stairs and the exophthalmos was only moderate. Twenty six years later when the patient is 73 years of age the condition is unchanged and she is of the opinion that she was cured by Jaboulay's operation.

Leriche who has performed Jaboulay's operation many times was surprised that the only persisting sign was the exophthalmos as usually this is the sign most markedly influenced by operation on the sympathetics. In discussing the case report he emphasized the importance of careful removal of the upper pole of the ganglion.

Patel ascribed the persistence of the exophthalmos to its long duration before operation which may have resulted in sclerosis.

WALTER C BURKET M.D.

Roeder C A Thyroidectomy *J Am Med Ass* 1924 133:517

To prevent an unsightly scar from induration and adhesions between the skin and the muscles and the skin and the trachea Roeder uses the following technique.

The Kocher incision is carried one layer deeper than usual that is through the deep fascia and the fascia is sharply dissected from the muscles beneath. The lobe of the thyroid to be resected is exposed by making a vertical incision through the sternothyroid and sternohyoid muscles 1 in. or more lateral to the midline and retracting the muscles outward. When necessary a very small rubber drainage tube is inserted. The split incision in the muscles is closed with No. 00 plain catgut and the skin incision is closed with No. 0 plain gut passed through the deep fascia and platysma muscle.

ARTHUR L. SKEFFLER M.D.

De Quervain F The Mortality of Operation for Simple Goiter (La mortalité d. l'opération du goitre simple.) *P. Hém. Par* 1924 22:169

De Quervain's statistics of 2200 operations for simple goiter showed a total mortality of 0.86 per cent. In the cases of 1682 patients less than 40 years of age there was only one postoperative death. The mortality (0.6 per cent) is therefore practically nil for this age period. In the cases of 316 patients between 40 and 50 years of age there were three postoperative deaths a mortality of 1 per cent. In the cases of 145 patients in the sixth decade the mortality was 4.1 per cent among patients in the seventh decade 20 per cent and among those in the eighth and ninth decades 25 per cent. From these figures it may be concluded that with the perfection of present-day surgical technique the danger has decreased up to the time of life when cardiovascular and renal manifestations begin to appear. The patient may be told that there is practically no risk under the age of 40 years but that thereafter the danger rapidly increases.

The greater the age the more important are the organic stigmata and the greater the necessity for pre-operative prophylaxis. De Quervain gives patients with cardiac conditions a pre-operative course of digitalis and those with diabetes or renal conditions dietary restrictions. The night before operation camphorated oil or optochine is administered. By these means the danger of pneumonia and operative shock is lessened. Shock is the principal risk in the goiter operation. De Quervain has never seen it in patients under 40 years of age but it was the cause of half of the deaths of patients over 40 years of age.

W. A. BRENNAN

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Dowman C E Head Injuries *J M d Ass*  
*Org* 1924 xiii 87

Head injuries should be considered from the standpoint of brain damage. Within certain physiological limits the soft parts accommodate themselves to changes in the shape of the skull but when the limit is reached there is local damage to the blood vessels membranes and brain and increased intracranial pressure due to hemorrhage and edema. The medullary centers are subject to this pressure. Four stages of cerebral compression occur (1) the symptomless stage (2) the stage of moderate increase with headache vertigo restlessness and irritability (3) the stage of medullary compensation in which increasing blood pressure overcomes intracranial tension and (4) the stage of medullary exhaustion in which compensation fails.

The local symptoms depend upon the area injured and certain general symptoms and findings depend upon the degree of pressure and the location of the trauma. The temperature which is at first subnormal is frequently raised later. The pulse rate which is primarily increased becomes slow and full if compression ensues. The blood pressure is subnormal during shock but rises with the increase in intracranial tension. Respiration is at first quick and shallow but becomes slow and stertorous. Pupillary changes may be of any type. The eye grounds should be examined routinely for retinal edema and choked disk. The pressure of the spinal fluid should be determined and the spinal fluid examined for the presence of blood.

There are eight types of head injury.

1 Massive brain injuries with profound coma and medullary exhaustion. These cases do not respond to any type of treatment.

2 Middle meningeal hemorrhage. The history and findings are typical. The treatment is operative.

3 Fractures with local brain injury. These should be treated by debridement.

4 Lesions with rapidly increasing intracranial tension. Subtemporal decompression is indicated.

5 Lesions with slowly increasing pressure and not marked symptoms. Frequently repeated doses of magnesium sulphate a hypertonic diet and occasionally the intravenous injection of 50 c.c. of a 30 per cent sodium chloride solution will arrest the increase in pressure.

6 Cerebral concussion with momentary loss of consciousness followed by practically no symptoms. Observation should be continued for several days.

7 Depressed skull fractures without symptoms. Operation is indicated.

8 Scalp lacerations. These should be carefully cleaned and the skull inspected before they are sutured. M L MASON M D

Delherm and Morel Kahn. The Roentgenography of Intracranial Tumors with the Exception of Hypophysial Tumors (La radiographie des tumeurs intracrâniennes tumeurs de l'hypophyse exceptées) *Presse méd* Par 1924 xxiii 93.

The authors review the progress of recent years in the roentgenological diagnosis of intracranial tumors. In certain cases the calcium content of the tumor may be insufficient to allow it to be seen directly and it is manifested only by the changes it causes in the cranium by compression or erosion. If it has a calcium content sufficient to produce a shadow it is directly visible apart. The authors discuss the roentgenological diagnosis of both invisible and visible tumors. The first group include pontocerebellar tumors hydrocephalus sarcoma and the cranial tumors of infancy.

Most directly visible intracranial tumors are calcified and malignant. In this group are endothelioma sarcoma fibroma and psammoma.

The authors report two cases of cerebral tumor in which the growth was clearly visible in the roentgen picture. In the first a thorough clinical examination led to the diagnosis of cerebral tumor. The roentgen plates showed a spherical mass about 6 cm in diameter with clear borders which occupied the right frontal region. Operation revealed a tumor which on histological examination proved to be a psammoma or angiolithic sarcoma.

In the second case examination revealed a bony projection on the right of the cranium. At operation a tumor was enucleated from the frontal region.

Because of the difficulty sometimes experienced in diagnosing tumors of the brain and determining their exact localization no method of exploration should be neglected. The X-ray may be of great aid. Direct visibility of tumors which is dependent upon their calcium content is the exception but erosion of the bones especially of the internal table modifications of the shape of the sella turcica under the influence of a tumor in its neighborhood enlargement of the osseous sutures especially in the infant are signs of importance. W A BRENNAN

Demel R. Meningitis Serosa Circumscripta Cerebralis Simulating Tumor of the Brain and a Contribution to its Etiology (De Meningitis s. circumscripta cerebralis et de Meningitis s. circumscripta Cerebralis Simulating Tumor of the Brain and a Contribution to its Etiology) *Acta f. Acta* 1923 xxv 561.

The author reviews briefly forty eight cases of meningitis serosa circumscripta cystica in the cranium.



nial cavity. In one third of them the condition was localized in the posterior cranial fossa. These cases can be treated very successfully by operative measures. A cure followed operation in 80.7 per cent of the cases reviewed. The operative mortality was 2.5 per cent and the total mortality, including that of cases not operated upon 14.5 per cent.

The origin of the cyst was traced to chronic inflammatory processes in the meninges accompanied by adhesions and overgrowth. While the normal meninges are not permeable to fluids it may be assumed that under pathological conditions with changes in the blood vessels the cyst walls may produce fluid. Chief among the causes are trauma and infection.

Because of the uncertainty of the symptoms, the diagnosis is often very difficult especially the differentiation from tumor of the brain. A case in which the course simulated that of brain tumor is reported. The patient, a man 34 years of age, had also a congenital developmental defect of the brain which probably had some etiological relationship to the meningitis. In 1917 an operation was performed for suspected tumor of the cerebellum by von Hübner. Fluid poured out in a stream from an arachnoid cyst but otherwise there were no pathological findings. In 1918 because of recurrence of the symptoms a puncture was made at the site of the former trepanation. A small amount of fluid was evacuated. Death occurred very suddenly a few days later.

Autopsy revealed a large subarachnoid cyst in the left island of Reil and marked separation of the left frontal lobe from the falx. A smaller cyst was found in the region of the anterior horn of the left lateral ventricle and a tightly filled cyst in the region of the defect in the cranium in the back of the head. The diagnosis was miliary gyrus of the frontal and temporal opercular region with abnormal conformation of the sulci and gyri.

It is evident therefore that a congenital abnormality in the region of the fovea of Sylvius is remarkably late in life to a circumscribed extramedullary hydrocephalus associated with relatively mild meningitis serosa. The clinical picture was characterized by masking of the local symptoms by the general symptoms. The findings are therefore dependent primarily upon the presence of fluid.

TREK (L)

Ayer, J. B. A Brief Review of Certain Medical and Surgical Conditions in the Treatment of Meningitis. *New York State J. M.* 9:4:1:340.

After discussing certain characteristics of the cerebrospinal fluid with respect to its relation to the course of meningeal infection on which and the treatment of all forms of meningitis.

The meningitis attacks the invading organisms in two ways: (1) through the blood stream and (2) by spreading from a focus of infection. Having reached the subarachnoid space the bacteria spread with such rapidity that in most cases almost from

the beginning the process is a cerebrospinal condition. Although the arachnoid is the first to react to the invasion the pia is soon penetrated and invasion of the subpial nervous tissue occurs. The perivascular spaces become infected, exudate is found in the ventricles and before long a periventriculitis is present. If death does not occur in the period of rapid dissemination a tendency toward localization becomes manifest. The exudate tends to localize in loci of the subarachnoid spaces. The most common areas of localization are the deep cerebral sulci, the basilar cisternae and the spinal meninges below the foramen magnum and at the thoracic level.

Theoretically treatment should be directed toward drainage of the infected membranes and irrigation of all meningeal recesses but practically this cannot be done. However it is possible to reach the subarachnoid space by other means than lumbar puncture. Multiple punctures of the spinal canal give admittance to the cranial fluid pathways for drainage and irrigation. In addition to the lumbar route ventricular and cortical subarachnoid punctures have proved of value in the treatment of meningitis. Puncture of the cisterna magna has been done by Ayer in 150 cases without accident. When this is combined with a lumbar puncture below a cortical subarachnoid puncture above the opportunity is offered to irrigate the meninges provided there is no block.

The indication for the various methods of treatment depend upon the presence or absence of a block in the cerebrospinal fluid pathway. Meningococcus meningitis should be treated with serum through the lumbar route providing the fluid pathway remains open. If the spinal subarachnoid space is blocked by exudate drainage or serum administration should be effected through the cisterna ventricles or cortical meningeal spaces. In other forms of meningitis lumbar and even cisternal drainage is entirely effective. On the other hand irrigation if begun early may be of value.

LOVELL F. DAVIS, M.D.

Ford, F. R. and Hior, W. M. Primary Sacraloma of the Leptomeninges. *Bull. J. H. P.* 1:2:934:65.

Four cases of so-called sarcomatous of the leptomeninges are reported in detail and twenty-eight cases found in the literature are added in abstract.

Clinically the first symptoms of this condition may be referable to the spinal canal or the cranial base below the termination of its rapid course both cerebral and spinal symptoms may be present. The symptoms may be grouped as follows: (1) signs of an extradural pressure (2) peripheral cranial nerve palsy (3) general meningitis (4) signs of a cord lesion (5) signs of posterior spinal root involvement (6) symptoms of the primary growth.

Usually the most striking feature presented by such cases is the evidence of increased intracranial

pres ure without any signs of a localized tumor In such cases the spinal symptoms may be characterized only by pain in the back and legs On the other hand the symptoms may closely simulate those of a cord tumor particularly when the cerebral symptoms develop slowly

The pathological findings have been very constant In fifteen of the cases reported the primary growth was found within the cerebral ventricles Hydrocephalus is almost always present If the primary growth is intraventricular small metastases may be found scattered over the ependymal surface Tumor cells are usually found implanted about the base of the brain from the optic chiasm to the pons and within the arachnoidal cisternæ and the interpeduncular space The perivascular spaces in the cortex may be invaded by tumor cell and the midbrain usually invested by a sheath of tumor tissue Beneath the cerebellar lobes the meninges are infiltrated and in each cerebellopontine angle a tumor mass is commonly found which invests the facial and acoustic nerves All of the cranial nerves become ensheathed by tumor cells which penetrate between the nerve fasciculi In the spinal canal the growth fills the subarachnoid space more or less completely and is always thickest on the posterior surface of the spinal cord The metastases occur first in the perivascular spaces and along the pia septa of the cord Small clusters of tumor cells are found about the spinal root ganglia and all of the roots show nodular enlargements

Cells of variable shape are found in the spinal fluid Some are large vacuolated and multinuclear Others are small round cells with darkly stained nuclei which contain very little cytoplasm The larger multinuclear cell are similar to the clasmocytes seen in peritoneal exudates Metastases occur by way of the cerebrospinal fluid Microscopically the picture is that of a true sarcoma although many tumors show glia fibers and must be classified as gliomata Perhaps the more accurate silver stains will show that all of these growths have a glial origin

Because of the variation in the clinical picture the diagnosis of the condition is difficult The presence of the characteristic cells described in the spinal fluid is almost pathognomonic of the disease In addition the cranial nerve palsies which occur are peripheral in type always bilateral usually symmetrical and unassociated with signs of a brain stem lesion Primary intraventricular growths may be shown by ventriculography

LOYAL E DAVIS M.D.

Park 1 H L The Clinical Significance of Pain in the Area Supplied by the Fifth Cranial Nerve  
Mt 1 Mt 2 924 11 69

Pain in the fifth nerve area without any obvious pathological finding to account for it is a difficult problem and one that is frequently presented to the neurologist to solve Paroxysmal trigeminal neuralgia belongs in this category but its characteristics

are so clear cut and so constant in their appearance that the diagnosis is less difficult and modern treatment offers a favorable prognosis

However paroxysmal trigeminal neuralgia is only one type of facial pain and constitutes only a small number of the cases of pain and disagreeable sensations in the area supplied by the fifth nerve More over treatment suitable for paroxysmal trigeminal neuralgia is productive of disaster when used for any disease simulating it

The crises of migraine may be restricted to a relatively small part of the fifth nerve area This pain usually occurs in the fourth and fifth decades of life replacing the usual headaches vomiting and scotomata of earlier years but it may occur earlier In some cases it may be associated with paroxysmal trigeminal neuralgia but it runs a distinct and separate course parallel with the latter disease and readily distinguished from it by its non paroxysmal character Section of the posterior root and alcohol injections of the fifth nerve in cases of migraine make the condition very much worse than before the operation

Old persons complain relatively often of pains aches and peculiar sensations in the jaws These symptoms are extremely persistent do not respond to treatment and become worse with each operative procedure They may be considered as due to arteriosclerotic changes in the ganglion or brain stem or as part of a senile delusional psychosis The common complaint is a drawing pulling or boring sensation in the edentulous gums In cases of tumor involving the ganglion intracranially or by involvement of the trunk and branches of the nerve at the base of the cranium or the floor of the orbit pain is an early symptom Nasopharyngeal malignancy is to be thought of in such cases The pain may be present months before the appearance of other signs of nerve irritation or destruction

Whatever the cause of the original trouble leading to multiple operations on the cranial sinuses alveoli and jaws such interference is apt to be followed by constant pain for which no explanation can be found A matter for consideration is the part played by the scarring and mutilation in the persistence of the trouble

Post herpetic pain may usually be recognized easily from the resultant scarring In the type involving the ophthalmic division of the nerve the scars may be hidden by the scalp hairs Pain may be a symptom of hysterical psychoneurosis or biological inferiority In such cases it is only part of the underlying inadequacy and should not be accepted as indicative of local disease Investigation of the patient from the standpoint of social efficiency will help in the diagnosis but usually such cases are extremely difficult to treat especially after surgical intervention on the local structures

Finally there is a large unclassified group of cases in which the cause of pain in the area supplied by the fifth cranial nerve cannot be adequately explained

**Frazier C. H. Anastomosis of the Recurrent Laryngeal Nerve for Paralysis of the Recurrent Laryngeal Nerve** *Ann. S. S. 1924 1: 11-161*

The author has devised an operative procedure to relieve bilateral paralysis of the recurrent laryngeal nerve by a method comparable to the nerve anastomosis used so successfully in paralysis of the facial nerve. Bilateral paralysis of the recurrent laryngeal nerve has frequently followed thyroidectomy.

In the majority of such cases the nerve is injured either at the inferior pole of the lateral lobe of the thyroid or at its passage to the inner side of the lateral lobe as it courses upward in the groove between the trachea and esophagus. Of course if the nerve has been resected throughout its entire course the conditions essential for nerve anastomosis are lacking.

Complete bilateral paralysis of the recurrent laryngeal nerve implies paralysis of the intrinsic muscles of the larynx, the constrictors, the dilators and the intrinsic tensor. Such a condition rarely causes aphonia, though there is usually more or less impairment of phonation due to the paralysis of the lateral crico-arytenoid muscles and the thyroarytenoid. The condition is attended also by dyspnea, which is more or less a useful clue leading to whether the paralysis of the posterior crico-arytenoid muscles is or is not complete and bilateral. If both muscles are paralyzed but not the diaphragm, respiratory distress is such that tracheotomy becomes urgent. Attention is called to the fact that unilateral or bilateral paralysis of the recurrent laryngeal may be present in a patient with an excellent voice. The terms complete and total paralysis should be applied only to the condition of the larynx in which there is paralysis of the abductors, tensors and adductors and the reflex tonus is gone. In cases of subtotal paralysis posticus paralysis of one vocal cord and partial posticus paralysis of the other the possibility of suffocation if the partial paralysis of the functioning cord becomes complete is such that tracheotomy should be performed as a precautionary measure.

In the past several measures were resorted to whereby the tracheal tube might be dispensed with. The most successful of these was dilatation of the glottis with bougies and ventriculocotomy or the removal of one vocal cord and the adjacent ventricular floor anterior to the vocal process.

Before nerve anastomosis is considered it is necessary to be certain that there is free mobility of the crico-arytenoid joint. If this joint is fixed no mobility can be restored, however perfectly the anastomosis may restore the nerve. The best way to determine the degree of mobility of this joint is to make passive motion with a larynx, all reciprocally through the direct laryngoscope.

It is assumed of course that nerve anastomosis is considered only after the possibility of effecting repair by direct end to end suture has been investigated and the procedure has been found impracticable. In such cases a very predominant motor function is lost, but the anastomosis is the first

laryngeal. For this the author chose the ramus descendens hypoglossi for the following reasons:

1. It is situated in close proximity to the recurrent.
2. It can be readily exposed on the sheath of the carotid vessels.

3. It is of such length that its transposition to the peripheral stump of the injured nerve without tension is fairly simple.

4. The functions of the muscles supplied by the recurrent laryngeal and the descendens hypoglossi are alike in that the intrinsic and extrinsic muscles of the larynx are a part of the same apparatus.

5. The residual paralysis of the sternohyoid and sternothyroid muscles, which the ramus descendens hypoglossi supplies, is a matter of relatively little consequence from either the cosmetic or the functional standpoint.

As a rule the recurrent laryngeal will be found entangled in cicatricial tissue from the superior pole of the lateral lobe of the thyroid downward as the result of the previously performed thyroidectomy. It is therefore essential to have some anatomical guide which will direct one to the nerve above the level of the lateral lobe or the stump of it. As the most constant and readily localized anatomical guide the author chose the inferior cornu of the thyroid cartilage. This process and the inferior constrictor of the pharynx which is attached to the inferior cornu and the adjacent surface of the thyroid cartilage should be kept in mind. Here the recurrent laryngeal divides into two branches, one to supply the inferior constrictor and one to the intrinsic muscles of the larynx. After the peripheral portion of the injured nerve is uncovered and identified the ramus descendens hypoglossi is easily identified.

Incisions on the anterior surface of the sheath of the carotid vessels. It must be borne in mind that to reduce wound contamination from the tracheal tube the incision should be made as far away from the median line as possible. Therefore the author places the skin incision along the anterior border of the sternocleidomastoid muscle.

Frazier reports a case in which such an operation was carried out on both sides. Five months after the first operation upon the right side examination showed restoration of tone and tension. The right thyroarytenoid which was apparently motionless before the operation was active and the cretaceous form of the cordal edge had been replaced by a normal margin. The patient stated that he noted a decided improvement in the laryngeal airway.

LOYAL E. DAVIS, M.D.

## SPINAL CORD AND ITS COVERINGS

**Vincent C. The Diagnosis of Neoplasm of the Spinal Cord and the Value of Intra-Arachnoid Injections of Lipiodol** (*Surg. J. diagnosis des tumeurs de la moelle épinière*) *Ann. Ch. 1924 1: 11-161*

The author calls attention to Sicard's method of injecting lipiodol into the spinal subarachnoid space

as a valuable corroborative diagnostic procedure. On the other hand he stresses the importance of the clinical syndrome of spinal cord tumors and is inclined to accept such clinical evidence before that obtained by Sicard's method.

In ninety-two per cent of the cases sensory disturbances accompany the motor symptoms produced by a cord tumor. Emphasis is placed also upon the diagnostic value of pains localized to a segmental distribution and to more diffuse pains present in the parts of the vertebral column adjacent to the cord tumor. In the presence of a paraplegia without demonstrable sensory disturbances the arrest of an injection of lipiodol within the spinal canal is not pathognomonic of a cord tumor. In other words lipiodol may give corroborative diagnostic evidence but should not be relied upon wholly to the exclusion of the clinical symptoms present.

Nothing is stated as to the after-effects of the injection of lipiodol. LOYAL L. DAVIS, M.D.

Froment J and Dechaume J. The Roentgen Diagnosis of Spinal Cord Tumors with the Aid of Lipiodol (R d o-diagnostic chud n lipodol t tumeurs edull r ) *P. méd. Par.* 9 4 xxxi 63

Intraspinous injections of lipiodol are of great aid in the roentgen diagnosis of spinal cord tumors but the interpretation of the findings requires considerable skill. The method is a valuable adjunct to clinical study.

By a series of schematic drawings the authors illustrate how an extra- or intra-medullary tumor may cause different dispositions of the injected lipiodol in the spinal canal. After the injection into the upper part of the canal it is not sufficient merely to note the point at which it arrests; the lipiodol is arrested a series of roentgenograms are necessary to determine whether this arrest is temporary or persistent and a study should be made of the progress and shape of the lipiodol image and the changes it undergoes during the next few days and when the patient's position is changed. In this manner helpful information with regard to the site and nature of the growth will be obtained. W. A. BEE, M.D.

Adson A. W. Tumors of the Spinal Cord: Surgical Treatment and Results. *M. & S. M.* 19 4 vii 79

This article is based upon a study of the records of 151 cases with a definite diagnosis of spinal cord tumor which were operated upon at the Mayo Clinic in the period from January 1910 to October 1923.

These tumors are found to be extradural, subdural but extradural and intramedullary. About half of the extradural tumors are malignant. The intramedullary tumors are usually benign and arise from the meninges, nerve roots or blood vessels. The intramedullary tumors are usually gliomas or ependymomas.

Extradural tumors with the exception of the malignant lesions lend themselves fairly well to

surgical removal. Extradural tumors which comprise almost half of the tumors found are usually removable. Intramedullary tumors are extremely difficult to treat surgically but in many cases relief may be given by splitting the cord dorsally and permitting the tumor to extrude. Caudal tumors sometimes arise from the filum terminale and are occasionally gliomas but if they are far enough below the conus to permit dissection operation is possible without trauma to the cord.

An accurate diagnosis depends upon several factors. A thorough detailed history of the symptoms in their proper sequence is invaluable. The most common symptoms—pain, motor and sensory disturbances and loss of bladder and rectal control and of sexual power—occur in all combinations depending on the size and location of the tumor and its relation to the cord. In some cases root pains have been present for years and various operations have been performed without relief. The proper diagnosis having been made only after the appearance of definite motor or sensory changes or both. Pain with or without impairment of motor function with or without sensory changes usually radiates along the nerves involved, may or may not be associated with tenderness of the spine, is exaggerated by coughing, sneezing, bending forward and lying down, often relieved by the standing position and walking and becomes worse at night. Tumors of the cauda equina are apt to produce pain before they cause sensory or motor disturbances.

A thorough general examination including an x-ray examination of the chest and spine is essential. This should be followed by a careful and accurate neurological examination. Lumbar puncture reveals the physical properties and pressure of the spinal fluid and usually the presence or absence of block of the spinal canal but if it does not give evidence of blockage, puncture of the cisterna magna and differential pressure studies may be necessary. Blocking of the spinal canal may be produced by inflammatory lesions but usually due to a tumor. Pneumography of the canal may aid by revealing the character and location of the lesion. Yellow spinal fluid is characteristic of blockage of the canal. The Wernicke test is often positive in cases of tumor but the average cell count and Wassermann test are not made positive.

The Mayo Clinic series of 151 cases were divided for convenience in study into nine groups. Group 1, extradural tumor, twenty-one cases. Group 2, subdural extradural tumor, forty-six cases. Group 3, intramedullary tumor, forty-one cases. Group 4, in which no tumor was found (chronic meningomyelitis etc.), thirty-two cases. Group 5, angioma of the cord, four cases. Group 6, echinococcus cyst of the cord, one case. Group 7, tuberculoma of the cord, two cases. Group 8, glioma of the cord, two cases and Group 9, cerebellospinal tumor, two cases.

The average duration of symptoms was twenty-nine months in Group 1, fifty-two months in Group 2, forty-one months in Group 3 and forty-five



the brachial artery he resected the sensory path of the median nerve from the axilla downward to the extent of 5 or 6 cm with the result that after one week the patient was able to return to active service in the army.

In the demonstration by POLENOFF of transection of nerves no information on the distribution of the blood vessels was given. In an operation for aneurism of the brachial artery with threatening spontaneous rupture and severe neuralgia of the median nerve the nerve was found blue and thickened in a spindle form by an aneurismal aneurisma spatum. To arrest hemorrhage it was necessary to introduce a tampon into the perineural incision for one day.

HESSE stated that when the conduction of an injured nerve is not entirely destroyed it is necessary to proceed with great care. It is better not to resect at all than to resect too little and suture together stumps which because of scar tissue and topographical relationships are unusable. On these grounds he advises freeing instead of resection in cases of contraction of the brachial plexus etc. Experiments made by him on the sciatic nerve demonstrated decided variations in the endoneurial topography and showed that an exact indication of the desired bundles can be made only by advancing from the periphery inward.

STRADY stated that when resection must be carried out, a section 2 to 3 cm in length is usually removed. The difference in the transected section is then so great that restitution of the endoneurial topography can be only approximate. The great differences in the statistics regarding functional results are to be explained partly by the life cycles in the length of the periods of observation. Experiments have shown that the length of time necessary for the regeneration of a nerve trunk is a matter of several years.

REBASCHOFF stated that in the study of endoneurial topography the staining methods perfected by the anatomists Worobjoff and Kondratjeff have great advantages over other methods of preparing histological specimens.

VOLEK (OS EN SCHEEN (Z))

### SYMPATHETIC NERVES

Hunter J. I. The Postural Influence of the Sympathetic Innervation of Voluntary Muscle  
*J. Am. Med. Ass.* 1924 12: 85

A review of experiments on section of the sympathetic nerves in association with decerebration and of the results obtained by Royle in operations in clinical cases leads the author to the conclusion that the sympathetic influence is continuously active in voluntary muscle the blood vessels and hollow viscera.

In voluntary muscle it produces plastic tonus which is subject to modification by the cerebrospinal system. The constriction of arteries arterioles capillaries and venules is brought about by

the same influence and may be inhibited by vaso dilator nerves. The involuntary muscle of hollow viscera is maintained in that degree of relaxation appropriate to accommodate the contents within it and the sphincters are tonically contracted by the sympathetic innervation. The parasympathetic nerves intermittently stimulate the muscle of the wall and relax the sphincter.

In each case the sympathetic system imposes a posture in the sense of that order employed by Sherrington on the structures innervated by it. It is possible to conclude therefore that this is a general and important part of the function of the thoracolumbar or sympathetic outflow.

STANLEY I. KOCHEVNIKOFF

Jonnesco T. The Surgical Treatment of Angina Pectoris (Traité de chirurgie de la gorge et du pectoral) 1924 13: 138

The author briefly reports upon the results obtained by sectioning the cervicothoracic sympathetic trunk in 11 cases of angina pectoris. He divides these cases into two groups. In the first group of four cases the angina dominated the clinical picture without any serious cardiac symptom. In the two other cases a well marked cardiac decompensation was present in addition to the angina. Of the four patients comprising the first group three are entirely well the longest interval after operation is eight years. The fourth patient died eight months after the operation. Both of the patients with signs of cardiac decompensation died on the fourth day after the operation.

Jonnesco believes that in the majority of cases of angina pectoris resection of the cervicothoracic sympathetic trunk upon the left side is sufficient. He emphasizes the fact that in such a resection the stellate ganglion must be removed since it constitutes the relay station through which afferent impulses from the heart and aorta pass to reach the spinal cord and brain. The theory that such a procedure interferes with the contractility of the myocardium or the vasoconstrictors of the lungs he refutes by calling attention to the perfect physical condition of the patients upon whom he has operated.

LOYAL E. DAVIS

### MISCELLANEOUS

Rosenow E. C. Specificity of Streptococci in the Etiology of Diseases of the Nervous System  
*J. Am. Med. Ass.* 1924 12: 449

By direct intracerebral or subdural injection of material from infection atria or primary cultures thereof in media affording a gradient of oxygen pressure it has been possible to isolate similar streptococci from closely related diseases of the nervous system. With this streptococcus freshly isolated after several animal passages and many rapid transfers the symptoms and lesions have been reproduced in animals (the rabbit monkey mouse and guinea pig) and the organism was demonstrated in

the lesions. This was rarely possible with similar streptococci from other sources and with the specific strains after long ordinary serial cultivation.

The strains from the various lots of the various systems were also much alike immunologically being agglutinated specifically by nephritis and poliomyelitis hyperimmune sera and by the respective sera of patients. These findings especially since they were consistently obtained over a long period and in a large number of cases may be regarded as fulfilling the requirements of a genetic relationship.

It should be emphasized that the properties on which specificity depends are fundamentally little and are demonstrable only by the attention to technical detail. During these experiments various facts have come to light which indicate that the specific properties of the streptococcus are acquired but perhaps a phase in the life cycle of the streptococcus group of organisms. A great loss of power to produce characteristic symptoms and lesions and specific agglutinating properties specifically is readily lost on serial cultivation. With some strains

changes in localization occurred so owing to serial passages. Thus after animal passage and after rapidly made subcultures several of the specific strains acquired the power to produce encephalitis. A strain from epidemic encephalitis after a series of rapid animal passages, produced acute encephalitis associated with marked meningitis on intracerebral injection and marked hemorrhagic edema of the lungs associated with leucogranulosis on intratracheal application whereas when first isolated it had little or no effect on intracerebral injection.

The prevalence of this organism in the throats of normal persons during an epidemic of poliomyelitis some of whom were not exposed to the disease was its absence in all but two of forty-eight proved carriers one year later when there was no poliomyelitis. Its prevalence in the throats of encephalitis contacts and its absence in normal persons generally indicate that perhaps epidemics of poliomyelitis, encephalitis and hiccups occur when streptococci normally present in the throat acquire peculiar neurotropic and other specific properties.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Bloodgood J C Benign Tumors of the Breast  
Ann S 12 1924 12 5 722

There are three forms of adenoma of the breast the fibro-adenoma the intracanalicular myxo fibroma and the cystic adenoma. The last is usually single but the two others are commonly multiple.

Multiple encapsulated adenomata occur most frequently before the age of 25 years are usually of one type and are freely movable where found. They vary in size from that of a pea to that of a silver dollar and are lobulated doughy and elastic. They never have the bar lines of carcinoma. Since cases of a single tumor in each breast or definite multiple tumors in one or both breasts have never been observed to be malignant without clinical evidence of malignancy tumor exploration is done for pain etc. and not for diagnosis. Multiple malignant tumors are never curable.

It may be impossible to differentiate single encapsulated adenomata from circumferential carcinoma and vice versa. Hence the necessity for a tumor exploration. However this should never be performed unless facilities for radical surgery and wound cauterization are at hand. There are a few encapsulated tumors which are associated with nipple retraction fat atrophy and lumping of the skin but if in such cases palpation suggests an encapsulated adenoma or a cyst and there is free mobility exploration is warranted especially if the tumor is in the nipple zone.

Large single encapsulated adenomata exist as fibro adenomata situated usually outside the breast and as intracanalicular myxomata which are confined to the breast. The former have no tendency to sarcomatous change and occur in women under 25 years of age. The latter show tendencies toward sarcomatous changes and have not been observed in women under 25 years of age. Whether a tumor reaches the size of a quadrant of the breast or larger is still freely movable and on palpation suggests an encapsulated adenoma sarcoma must be considered. (Edema found at operation about an apparently benign tumor is very strong evidence of malignancy and in the majority of such cases the tumor will prove to be sarcoma.)

Three types of encapsulated adenomata are sometimes suspected of malignancy: (1) cystic adenomata which in the author's experience have never been cured as carcinoma after local removal; (2) calcified fibro adenomata; and (3) intracanalicular myxomata which are rarely mistaken for carcinoma but whose cellular stroma has been considered sarcomatous.

The object of tumor exploration is not to remove benign tumors but to detect early malignancy.

In a series of nearly 300 of the author's cases there was no recurrence of tumor as carcinoma.

WILLIAM P. VAN WAGENEN, M.D.

Bloodgood J C Paget's Disease of the Female Nipple A Preventable Disease Curable in Its Early Stages A Study of Thirty Cases  
Br J 1924 5 46

From a clinical and pathological study of thirty cases of lesions of the female nipple the author concludes that Paget's disease of the nipple is a preventable disease which is curable in its early stages.

Seven benign lesions of the nipple were completely healed by cleansing measures. There were two examples of the red finely granular weeping nipple from which a hemorrhagic serum exuded. The treatment consisted of washing with soap and water, the application of alcohol and dressing with silver foil. Five cases of warts without any history of bleeding or scabbing healed under treatment with soap and water washing and the application of alcohol and white petrolatum. These cases and seven of benign lesions of the nipple subjected to operation lead the author to the conclusion that there is no relationship between subepidermal adenoma and Paget's disease of the nipple in that the disease process begins either in the epidermis of the nipple or in the downward growth of the epidermis into the openings of the ducts.

Benign lesions of the nipple subjected to operation were:

1 Benign subepidermal encapsulated adenomata nine cases. In only one instance was there a superficial ulceration resembling early Paget's disease.

2 Warts three cases. One was the site of a minute ulcer suggesting early Paget's disease.

3 The red finely granular weeping nipple without any underlying adenoma one case.

4 Superficial nipple ulceration which clinically resembled early Paget's disease but microscopically proved benign two cases.

Twenty-two case reports illustrating all stages of nipple lesions from those obviously benign to typical late Paget's disease are given with illustrations. From the study of these the author concludes that carcinoma of the epidermis of the nipple begins as any other carcinoma of the skin or mucous membrane in a benign lesion as a superficial ulceration or wart or an area of chronic inflammation which undergoes subsequent cancerous change. The involvement of the ducts and breast is secondary. Of thirteen cases of early cancer of the nipple the ducts were involved in all but two. All of the nipple lesions demonstrated microscopically to be



cancer exhibited ulceration to a greater or less degree. The lapse of time from the early ulcerative stage until the development of frank cancer varied from eight months to two years. It is safer however to look upon a definite ulcer of the nipple of more than three months duration as clinically suggestive of cancer. Age nursing and syphilitic infection apparently play no rôle in the etiology of these nipple lesions.

Local mastectomy is contra indicated in the operative treatment. When the nipple lesion is malignant the radical operation alone is sufficient. When the lesion is benign local removal is sufficient. Paget's disease of the nipple with a lump in the breast is a hopeless condition whatever the treatment.

WILLIAM P. VAN WAGENEN, M.D.

Thompson J. E. and Keiller V. H. Multiple Skeletal Metastases from Cancer of the Breast. *Surg Gyn & Obst* 1944; 37: 367.

The authors report the clinical history and autopsy findings in the case of a 28-year-old multiparous negro woman with multiple and widespread metastases in the skeletal system and viscera from a cancer of the breast. The breast tumor was very small until late in the disease was not associated with axillary metastases until very late and developed at the site of a tumor known to have been present since the patient's tenth year of age. Involvement of the lymph nodes seemed to be secondary to metastatic osseous deposits.

On section two areas of carcinoma 2.5 and 4 cm in diameter respectively were found in the lower outer quadrant of the left breast. Both breasts showed marked fibrocystic mastitis. The microscopic appearance of the breast tumors and metastases was that of medullary carcinoma. The cancerous breast showed precancerous proliferation of the duct epithelium. The entire picture was that of a blood stream dissemination of carcinoma but the kidneys and spleen had escaped.

WILLIAM P. VAN WAGENEN, M.D.

Hanrahan E. M. Jr. Marked Structural Alteration in a Breast Carcinoma Recurring After Eleven Years. *Bull Johns Hpk Hosp Bk* 1924; 5: 52.

In the case reported the tumor of the breast recurred eleven years after radical amputation for Paget's disease of the nipple with an associated breast tumor.

Examination of the tumor about two months after the onset of the recurrence showed it to be very cellular and made up of large and small irregularly shaped spindle cells. The nuclei also varied in size and shape but most of them were small and elongated. They were arranged irregularly. The cells and their arrangement suggested sarcoma but there were in addition islands and areas of perfectly typical epithelioid cells arranged in the sheet-like fashion of squamous cell carcinoma with scant intercellular substance. Both cell and nuclei were

large. Many cells contained two or more nucleoli, and there were numerous mitoses.

Examination of the remaining tissue three weeks after radium radiation showed that the spindle cells described had entirely disappeared and that the section was made up of necrotic eosin staining material in which there were many polymorphonuclear neutrophils and lymphocytes. There were also scattered large swollen cells resembling the epithelioid cells just described. These stained more intensely with hematoxylin and showed fewer mitotic figures but a greater number of nucleoli and vacuoles.

Erving who examined the first sections was inclined to believe that the spindle cells were altered epithelial cells which after radium treatment have less capacity for alteration especially since the original tumor was Paget's disease—a disease of squamous epithelium which is prone to produce spindle cells and to resemble sarcoma.

The author also considers the possibility that the difference in the appearance of the cells after radiation might have been an expression of the reaction of two distinct types of cells to this treatment.

WILLIAM P. VAN WAGENEN, M.D.

Kelly H. A. and Fricke R. E. Problems in the Treatment of Carcinoma of the Breast. *Surg Gyn & Obst* 1944; 39: 399.

The definite prolongation of life in several cases of recurrent carcinoma of the breast treated by a combination of radium and surgery encourages the continuation of this therapy. Surgery takes precedence over radium when the process is limited to the breast. Every breast tumor of doubtful nature should be operated upon and the section of the tissues kept for a permanent record. Heavy radium treatment over the operative field the axilla and the supraclavicular space should be given ten days after the operation. Radiation of the breast preliminary to operation is of doubtful value.

WILLIAM P. VAN WAGENEN, M.D.

Bowling H. H. Radium and X-Ray Treatment of Advanced Carcinoma of the Breast Prior to Amputation. *Radiology* 94: 143.

The author discusses four cases of carcinoma of the breast in which the condition was regarded as inoperable at first but amputation was done after treatment with radium and the X-ray.

In the treatment with radium the skin surface was marked off into areas measuring 3 by 4 cm and each area was given 700 mgm hrs. The radium was separated from the skin by a 2.5 cm of balsam wood 2 mm of Para rubber and 2 mm of lead. In three of the four cases needles containing 10 mgm of radium were buried in the mass and left in position for from fourteen to twenty hours. X-ray treatment was also given in every case. In one instance amputation was performed two months after radiation in two cases three months later and in one case six months later.

The primary tumors were reduced in size and masked by dense fibrous areas and nearly all of the metastatic tumors had decreased so much that they could not be palpated. The microscopic changes found after operation corresponded to those noted by MacCarty in untreated cancer. They included differentiation, lymphocytic infiltration, fibrosis and hyalinization. The changes occur in the order given. MacCarty regards them as possible method of defense. After he has shown that differentiation occurs more rapidly following radiation, the other changes are probably methods of replacement. The end result, degeneration with hyalinization, is the same in treated and untreated cancer.

In three of the cases the neoplasm was an adenocarcinoma, the fourth was so altered it could not be classified. Areas were discovered which showed the tissue changes of differentiation and lymphocytic infiltration, but these were relatively uncommon as they are early changes. Occasionally cell were found which were considered possibly active. Fibrosis was the outstanding feature, however, and in many sections was present throughout, intimately associated with degenerating carcinoma cells. Certain areas had the characteristic stromal qualities of calcium deposits in hyaline material.

The findings are interpreted as indicating the necessity of giving the amount of radiation suitable to the lesion. The radiological treatment should draw attention to evolving method of treatment that will initiate or accelerate the natural defenses. These defenses are result from chemical change. The amount of radiation producing them in exactly the required amount might be called the physical or biological dose. This should be the goal in the radiation of cancer. As a preoperative procedure this form of irradiation should do much to eliminate the risks of local recurrence and dissemination which accompany the necessary surgical manipulation, but sufficient time must elapse between irradiation and operation to allow the desired changes to take place. J. S. N. DUN, M.D.

### TRACHEA LUNGS AND PLEURA

Gekler, W. A., Lohr, W. R., Rankin, H. P., and Weigel, B. J. Tuberculous Causation of the Lung. *Monographs in Lung Disease*, 1924, 1, 1-45.

Gekler mentions the theory which is being generally accepted that physiologically there is a distinct difference between the upper and lower portions of the lungs, the upper portions being comparatively fixed while the lower portions are opposed to parts of the chest wall having a wide range of motion, respectively with each respiratory cycle.

In childhood the prevailing manifestation of intrathoracic tuberculosis is involvement of the bronchial glands with slow extension probably along the lymph channels to the periphery. In this type of

tuberculosis the peribronchial interstitial or incipient tuberculosis of the textbooks the extension seems to be into those areas of the lung having the least mobility. In the malignant type of tuberculosis is pulmonary tuberculosis it has been shown that the consolidations are caused by aspiration of tuberculous pus down the bronchial tree. Two factors with a decided influence on this aspiration are the normal respirations and the action of pressure and suction accompanying cough. Gekler advances the hypothesis that the source of the tuberculous pus may be the peribronchial lymph glands. He quotes Jackson as stating that peribronchial lymph glands may erode into the bronchus. In Gekler's opinion treatment should be directed toward arresting the mobilization of the tubercle bacillus in the bronchial system.

LOVELACE has opened three tuberculous cavities by rib resection and has found the procedure entirely safe. In entering the cavity with a cautery in the first case he found that the inspiration of the smoke caused a severe cough reaction. Therefore in the second and third cases he inserted a small rubber catheter attached to a suction apparatus and in these cases there was no cough when the opening was enlarged with the cautery. He prefers the cautery to the knife because it produces less hemorrhage and there is less chance of spread of the disease through the circulation. After the cavities were opened they were drained and then chemically sterilized with gentian violet and methylene blue.

RANKIN and WEIGEL advocate the use of methylene blue after prolonged treatment with gentian violet. The cavities are not only sterilized by this treatment but also apparently contracted.

RALPH B. BERTMAN, M.D.

Shaw, H. B. The Treatment of Consumption by Artificial Pneumothorax. *Pittsburgh*, 1924, 1, 99.

Artificial pneumothorax is definitely indicated in cases of repeated and voluminous unilateral pulmonary hemorrhage and unilateral rapidly progressive pulmonary tuberculosis. It is expedient in chronically progressive unilateral cases, cases in which there is cavity formation with fever and septicaemia, even those with a limited amount of contralateral activity, the cases of young persons in which aspiration of a serous pleural effusion has been done even if at that time there appears to be no evidence of tuberculosis either in the same or the other lung, and cases that have developed a spontaneous pneumothorax even if there are no signs of tuberculosis.

The procedure does not achieve a radical cure of the disease but when it is successful it brings about greater and more prompt improvement than any other method of treatment so far known. It is a fairly common experience to find that the collapse therapy frees the patient from cough, expectoration, fever, and the resultant disability of the septicaemia.

and permits him to return to his home without fear of spreading the infection. It is admitted, however, that it has not yet been proved that it will prolong life. The author believes that in the future the induction of artificial pneumothorax will not be postponed until other methods have been tried and found wanting.

RALPH B. BETTMAN, M.D.

Archibald F. The Surgical Treatment of Unilateral Pulmonary Tuberculosis. *Am J S* 1924 22:4 17

Archibald performs an extrapleural thoracoplasty under anesthesia induced with nitrous oxide and the local injection of novocaine. He begins resection with the tenth rib, leaving the eleventh rib for the last. The operation is performed in two stages. The resection extends under the erector spinae muscle close to the articulation of the transverse process. The greater the amount of rib resected the greater the operative risk, but also the greater the improvement if the patient survives. Sauerbruch recommends the resection of from 4 to 8 cm. and Bull and Storckl on the resection of from 6 to 16 cm.

The injection of alcohol into the intercostal nerves to relieve postoperative pain was tried by the author twice and then discarded. Archibald once believed that artificial pneumothorax should be tried first but has gradually come to the conclusion that a certain percentage of cases progress better if the thoracoplasty is done in the beginning. This class includes those in which it would be difficult to secure regular refilling.

In conclusion he presents some very interesting statistics of a large number of cases in which he has performed the operation described. These indicate that extrapleural thoracoplasty has a definite place in the treatment of selected cases of pulmonary tuberculosis.

RALPH B. BETTMAN, M.D.

Moore W. F. The Bronchoscopic Treatment of Suppurative Diseases of the Lung. *J Am M A* 1924 1: 236

The abscess or bronchiectatic condition having been located by means of the physical signs and X-ray examination, a diagnostic bronchoscopic examination is performed. At the latter examination uncontaminated specimens of the secretions are obtained for an autogenous vaccine. The vaccine is given twice a week. Every two months a fresh one is made. The patient is instructed to aid in the treatment by establishing drainage through posture. At the second bronchoscopic treatment the affected areas are thoroughly aspirated. The treatment is completed by cleansing with a solution containing trinitrophenol and iodine. Seven-day intervals are usually allowed between bronchoscopic treatments. In the cases of children bronchoscopy is done without anesthesia or the use of a sedative and in the cases of adults without general anesthesia.

The conclusions arrived at by the author are as follows:

1. In the majority of cases the localization of the disease occurs at the base of the lung. Suppuration is more often proximal than peripheral.

2. Bronchoscopy is the ideal means by which to facilitate better drainage and aid medical treatment.

3. Early diagnosis and treatment are advantageous.

4. Only a certain percentage of patients with lung suppuration can be cured by bronchoscopic drainage and treatment. In a larger percentage the condition can be improved. The remainder with few exceptions can be made more comfortable through the alleviation of their symptoms.

5. Because of the shadow cast by the fibrous tissue formed in the affected area in the healing process the roentgen ray findings do not show improvement as quickly as the subjective symptoms.

6. Bronchoscopy is a relatively safe procedure in the hands of men properly trained in the work.

7. Because of the lessening of cough and foul expectoration with other improvement patients are willing to continue treatments as long as they are beneficial.

RALPH B. BETTMAN, M.D.

Archibald F. The Surgical Treatment of Bronchiectasis. *Can M A J* 1924 1: 197

After tracing the advances made in the surgical treatment of bronchiectasis the author summarizes the dangers which arise following lobectomy. He concluded that these dangers might be obviated by bringing the root of the lobe after its excision into the skin wound and fastening it entirely outside the chest. In this way the mediastinum would be fixed, a closed pneumothorax would be rendered impossible, mediastinal dragging with its serious effect upon the heart action would be prevented and infection of the lung root would not be communicated to the pleural cavity if a mediastinitis occurred and the infected integrated stump of the lung would be discharged into dressings entirely outside the chest. In order to do this mobilization of the chest wall by rib resection would be necessary in order to bring it in toward the mediastinum as the mediastinum cannot be brought out to the uncollapsed chest wall. An operation in which an attempt was made to carry out these advances gave a satisfactory result.

Archibald concludes his article by referring to the operation recently described by Graham which consists of removing the diseased lobe in several stages, usually with a softening iron and after the involved portion of the lung has been exposed by rib resection. It would seem probable Archibald writes that Graham's method will become the operation of choice and that lobectomy will be reserved for the exceptional case.

RALPH B. BETTMAN, M.D.

Friedland M. F. The Pathological Physiology of Bilateral Artificial Pneumothorax. (*De pathologica Phlegmonum et Pnemothorax*) *K M J* 1923

The author attempted to determine experimentally how long life may be maintained in bilateral

pneumothorax Following bilateral thoracotomy on thirty two dogs, eight cats and three rabbits he determined the intrapleural pressure, the depth and frequency of respiration, the blood pressure and the quantity and quality of the respired air. The determinations were made for both open and closed pneumothorax.

It was found that the animals were able to endure bilateral pneumothorax if both openings in the chest wall were smaller than one half the diameter of both large bronchi. When the openings were larger death occurred within thirty minutes. The closing of one opening was followed by marked improvement in the animal's condition. The closure must always be made during expiration. If it is made during inspiration asphyxiation results. To counteract asphyxiation it is necessary to re-open the chest and make a fresh closure during expiration. The dogs withstood the bilateral closed pneumothorax considerably better than the open pneumothorax.

The author made thoracographic determination with Marey's thoracograph. It was found that in closed or slightly open pneumothorax breathing was deeper, quicker and more frequent than under normal conditions. In wide open bilateral pneumothorax the respiration was superficial and suggested asphyxiation.

In closed bilateral pneumothorax the intrapleural air pressure was raised but showed marked fluctuations.

In the closed or slightly open pneumothorax the fluctuations were so great that they may have acted compensatorily or even hypercompensatorily. After the resorption of the air that had penetrated into the pleura the pressure in the pleural space gradually returned to normal.

The author attempted to discover also whether the lungs became entirely or only partially collapsed in open pneumothorax. By means of a sacroplethysmograph he determined that complete collapse of the lungs occurred in all forms of open pneumothorax but was more gradual in slightly open than in wide open pneumothorax.

In dogs the quantity of expired air fluctuated in bilateral pneumothorax, being sometimes more and sometimes less than normal. The percentages of carbon dioxide and oxygen were generally lowered. The quantity of respired air and the exchange of gases per hour reached the normal or above normal only because of the fact that respiration was frequent.

With the establishment of a double pneumothorax the blood pressure was somewhat raised. Subsequently it either remained raised or again sank to normal.

In the author's opinion his experiments should increase the courage of surgeons in the performance of two types of operations: (1) the radical bilateral one-stage operation for empyema and the establishment of artificial bilateral pneumothorax.

PETROW (Z)

## HEART AND PERICARDIUM

Bransfield J W Pericardiotomy for Suppurative Pericarditis *A. N. S. S.* 1934 LXXIX 293

At a meeting of the Philadelphia Academy of Surgery Bransfield presented an 18 year old boy who two days previously had been stabbed with sharp pointed scissors in the left chest and since then had complained of dyspnea and pain.

Examination showed an abscess over the ninth rib in the nipple line. Spontaneous rupture of the abscess was followed by improvement but the dyspnea continued. Dullness was found from the seventh rib to the base of the lung in the axilla. The X-ray report was as follows: Pericardial shadow enlarged. Suggests the presence of fluid. The diaphragm moves freely on both sides. Fracture of bone of tenth cartilage.

Eight days later under local anesthesia the fourth rib was resected close to the sternum, the pericardium was opened and 1 oz of pus was evacuated. Cultures showed the staphylococcus aureus. Another examination with the X-ray showed the pericardium still greatly distended. Under general anesthesia the fifth and sixth cartilages were resected, the pericardium was brought up into the wound and incised and about 1/2 pt of fluid was evacuated. This fluid also showed the staphylococcus aureus. Drainage and daily irrigations with normal salt solution were continued for two weeks. The wound was then dressed with Dakin's oil.

Convalescence was stormy because the patient was difficult to manage. During the first three weeks the temperature ranged from 100 to 104 degrees F. After the fourth week it was normal. After the fifth week the patient was out of bed. Examinations at three week intervals have failed to reveal any cardiac disturbance. The patient is able to do his regular work and X-ray examination of the pericardium shows the sac to be normal in size.

In the discussion of this case report ROBERTS said that it is generally unnecessary to excise the costal cartilages as a horizontal incision in the fourth or fifth interspace usually affords ample room for drainage and irrigation. He advised caution in relying upon the X-ray findings in pericarditis as an enlarged heart may stimulate an effusion.

DESPARD said that the exposure is improved by the vertical incision and told of a case in which there was an anomalous pleura which would have been opened if the horizontal incision had been used.

JORDON stated that he favors Folsom's method of resecting the fifth, sixth and seventh cartilages for exposure, drainage and irrigation as it is important to reach the base of the pericardium.

CLAYTON F. ANDREWS, M.D.

Allen D S Intracardiac Surgery *I. A. S. S.* 94 37

Allen has perfected a technique by which intracardiac surgery can be done under direct vision by means of the cardioscope which gives a direct view

of the interior of the heart without interfering with the circulation. Formerly the pedicle of the heart was clamped and it was therefore necessary to complete the work to be done in two and one half minutes.

The cardioscope was developed on the basis of the observation that when a heart was immersed in bloody fluid in a glass jar the details of the exterior of the organ could be seen whenever it came into contact with the glass.

Approach through the wall of the left ventricle for operation on the mitral valve resulted in a mortality of 50 per cent. The new approach is through the left auricular appendage a sort of thumb-shaped structure which comes off the side of the left atrium. This permits a good view and causes no symptom in the author's cases in which it was used there were no deaths. The method of introducing the cardioscope is described in detail. The immediate and later effects of the procedure on the heart itself were negligible. Occasionally there were a few extrasystoles. After the operation the cut in the valve remains open its entire length. The only disturbance noted in the systemic circulation is a slight lowering of the blood pressure during the operation.

Of especial importance in consideration of the operative relief of mitral stenosis are the effects of regurgitation and stenosis of the mitral valve on the pulmonary circulation. The effect on the pulmonary circulation of mitral stenosis and the difference between the pulmonary circulation in mitral stenosis, mitral regurgitation and normal conditions have been established by experimental data. The author believes that a patient with marked mitral stenosis plus slight regurgitation would be benefited by changing the stenosis into a regurgitation.

S C LYONS M D

## ESOPHAGUS AND MEDIASTINUM

Carmody T E. The Treatment of Carcinoma of the Esophagus with Radium. *L v go p*  
924 XXI O

In the author's opinion the roentgen ray should be used with radium in the treatment of carcinoma

of the esophagus as it has the advantage of penetrating further than radium.

The method of treating with radium depends upon the operator. Radium has been applied directly to the growth from within by placing it under direct vision through the esophagoscope by means of a stylet of wire or a rubber tube by allowing the patient to swallow the tube with a thread or flexible wire attached and by the use of Vinson's apparatus with a bougie above and below tube.

Carmody reports a case in which radium was used to good advantage. The last two treatments were given by means of the Vinson brass apparatus.

JAM S C BRASWELL M D

Lerche W. Suppuration in the Posterior Mediastinum with a Report of Cases. *A k S g*  
924 v 47

The mediastinum consists of anterior and posterior divisions with the trachea forming the intervening partition.

Lerche reviews the anatomic arrangement of the deep cervical fascia and reports four cases of acute suppuration of the posterior mediastinum in which the focus of infection was in the neck. He concurs with Schmidt's observation that when an acute suppuration in the visceral or retrovisceral spaces has extended to the posterior mediastinum the shortest route by which the cavity may be drained is through the lower cervical region. He therefore makes an incision along the inner border of the sternocleidomastoid muscle down to the sternal notch which gives access to the lower cervical part of the esophagus. The finger then readily enters the posterior mediastinum by following the lateral aspect of the esophagus.

The four cases are reported in detail as to history, operative procedure and results and the report is illustrated with roentgenograms. Three patients recovered and are well; one died.

In the author's opinion the majority of cases of acute suppuration of the posterior mediastinum can be cured by the method of drainage described. If the drainage in the neck proves insufficient in cases of chronic suppuration it should be supplemented by posterior mediastinotomy. S C LYONS M D

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Vogel C Peritoneal Adhesions (U b r B uchf ll  
verwachsung) E g b d Ch O h p 9 3  
xvi 28

This discussion is based chiefly on 261 articles in the literature dealing with the various aspects of peritoneal adhesions such as their anatomy, their clinical and experimental pathogenesis and their prevention and treatment.

Ninety-one per cent of adhesions due to laparotomies can be demonstrated by pneumoperitoneum. About 3 per cent need state operation because of the symptoms of ileus.

An important contribution on the origin of adhesions was that of Wegener who called attention to the fact that even the irritation of two superimposed layers of the parietal peritoneum is sufficient to cause them to adhere to each other. Other factors responsible are intraperitoneal hemorrhage, mechanical and chemical injury of the endothelium in inflammatory changes and foreign bodies.

Postoperative adhesions are best avoided by operating with minimal bleeding and damage to the tissues and the greatest possible speed. Immoderate cutting of the peritoneum is to be avoided. Iodine disinfection of the skin is held responsible for adhesion of the everted viscera. Defects in the peritoneum in which peritonization is impossible should be covered with transplanted omentum. Of great aid in preventing postoperative adhesions is the early reestablishment of intestinal movement. One of the best remedies is physostigmine given in doses of 0.001 gm on the operating table. Neohormonalennin and peristaltin are other effective intestinal stimulants; these also must be given on the operating table. A glycerin enema may be administered after the first injection. Heat should be applied by means of the thermophore, the hot air cabinet or diathermy.

Under no circumstance should operation be preceded by catharsis. Old fecal masses should be removed by the administration of castor oil but the surest stimulant of peristalsis is the normal content of the intestine. The inclined sitting position advocated by Rehn and the walking movements made in bed recommended by Hensel have a favorable influence upon peristalsis. Vogel obtains good results from the use of gum arabic as a lubricant. Solutions of sodium chloride have not proved of much value. Human fat (humafat) must be tested further. Recently attempts have been made to check the exudation of fibrin by mixing the lubricating gum solution with sodium citrate.

In every case all of the non-operative methods should be tried first but if the symptoms are severe

operation should be performed at the first suggestion of intestinal obstruction.

The prognosis is good in cases with band-like adhesions and those operated upon early in the others it is always doubtful not only as regards the immediate outcome but also as regards recurrence. KLOSE (Z)

Rietti F Mesenteric Cysts of Adrenal Origin (Sulle  
1st mase tiche di origine urale) A ch ital  
d ch 19 4 1 75

Mesenteric cysts are rare. Only about 250 cases have been reported in medical literature. The author deals only with true cysts, i.e. those lined with epithelium or endothelium. These arise from various structures. The very rare type developing from embryonal rests of the urogenital tract includes those having their origin in the adrenal. Rietti has been able to find only five mesenteric cysts of adrenal origin described in the literature. He reports a sixth case in which microscopic examination showed the presence of tissue similar to that of the adrenals. He concludes that this cyst had its origin in an embryonic rest in the mesentery and was not connected with an accessory adrenal.

W A BRENNAN

Wildegans H A Further Report on the Surgical Treatment of Diffuse Infective Peritonitis (Wit re t t l u n g u b e r d e c h i u g a c h e l i b d l u d e r a l k r o e n d i f f u s n Peritonitis) Arch f kl Chir 923 cx v 239

This article, which is a continuation of reports published from Koerte's service during the years 1890 to 1910, gives the findings in 542 cases of diffuse peritonitis due to various causes which were treated during the period from 1910 to 1922.

It was found that in the average case the absorption of bacteria from the peritoneal cavity was greatest in the early stages of the condition. The demonstration of virulent organisms in the blood does not necessarily mean an unfavorable result.

In 380 cases the peritonitis had its origin in the appendix. Of these 87 per cent were cured where as in the corresponding cases previously reported a cure was obtained in only 57.4 per cent. This improvement in results must be attributed chiefly to the fact that in the second series of cases early operation was more often possible.

In the early stage of peritonitis due to appendicitis irrigation and spooning out of the peritoneal cavity may be done but in the late stage irrigation is contraindicated. The claim that secondary abscesses are more common after irrigation is not justified. Drainage of the peritoneal cavity is usually unnecessary and often injurious. Tube drainage is

indicated only when in addition to diffuse peritonitis there are walled-off collections of pus. Late abscesses do not disturb the postoperative course any more often when the abdominal cavity is closed primarily than when drainage is established. In cases in which primary closure is effected there is less danger of fecal fistulae and intestinal prolapse; the number of cures is increased and the after-treatment is shortened.

Primary puncture of the intestine and enterostomy are necessary when there is excessive intestinal pressure but primary and secondary enterostomy are seldom indicated. Enterostomy wards off intestinal obstruction not peritonitis and therefore should be done only when distention of the intestine dominates the syndrome.

The second most frequent cause of diffuse peritonitis in the cases reviewed was perforation of a gastric or duodenal ulcer which occurred in fifty-three instances. A cure was obtained in more than two-thirds. As a rule suture of the perforation and covering with omentum were sufficient. In cases of ulcer near the pylorus the addition of a posterior retroligular gastroenterostomy is advisable. Circular resection of the stomach should be reserved for special cases. The relatively favorable number of cures was obtained by irrigation followed by complete closure of the abdominal cavity without tamponade or drainage. The occurrence of late abscesses was not favored by the omission of drainage. In peritonitis due to perforation of the large or small intestine the prognosis for cure was less favorable (of twenty-four cases only ten were cured).

Also in the treatment of gynecological peritonitis closure of the abdominal cavity without drainage was found superior to drainage provided it was possible to remove or close off the source of infection. When there is perforation of the uterus with damage to the viscera the removal of the uterus is considered necessary only when pregnancy is well advanced when hemorrhage is uncontrollable and when there is tearing of the adnexa. The somewhat more frequent occurrence of secondary abdominal abscesses following omission of drainage is more than outweighed by the much more favorable results obtained with primary closure of the abdomen.

In cases of peritonitis due to pancreatitis drainage is necessary since in these cases the source of infection cannot be removed. In peritonitis arising from the biliary tract the gall bladder should be removed primarily and a tube inserted in the stump of the cystic duct. If this is impossible the gall bladder should be drained. Irrigation of the abdominal cavity is advisable.

There were six cases of pneumococcus peritonitis all of these occurred in little girls, a fact which speaks strongly for infection by way of the genitalia. Of the remaining cases of general peritonitis some were due to rupture of the bladder, others resulted from pleural empyema and others were of a metastatic nature following angina, polyarthritides or thyroiditis.

In eleven cases no cause could be determined either by operation or autopsy. HARRIS (2)

Mandl F. Cryptogenetic Peritonitis (Beit. z. zur Frage der kryptogenetischen Peritonitis). Dtsch. Chir. 1934, 289.

In the presence of certain forms of inflammation of the peritoneum the physician finds himself entirely powerless. Foremost among these is cryptogenetic peritonitis, the mode of origin of which is unknown. This condition includes (1) pneumococcus peritonitis (2) streptococcus peritonitis (3) gonorrheal affections of the peritoneum without evident involvement of the genitalia (4) the peritonitis of little girls (Riedel) which is not due to streptococci or staphylococci (5) inflammation due to the migration of infection through the intestinal walls to the absence of macroscopic evidence of perforation, and (6) cases in which no clue to the cause is found during operation at autopsy or on bacteriological or histological examination of the tissues.

The most frequent excitant of cryptogenetic peritonitis is the Fraenkel-Weisselbaum pneumococcus. The author found this bacterium twice. Both cases were fatal.

A case of streptococcus peritonitis associated with appendicitis oxyurica without perforation is also reported. This form of peritonitis is relatively frequent in epidemics of sore throat. In most cases the infection is conveyed by the blood stream or by swallowed secretions which find a particularly good culture medium in the inflamed gastrointestinal canal. The author reports one such case. A differential diagnosis without a bacteriological examination is impossible.

Mandl reports also a case of gonorrheal peritonitis. At examination of the vagina and the urethra revealed only saprophytes and the vulva and vagina showed no macroscopic changes. Operation was performed on a diagnosis of peritonitis due to perforation. Under pressure the pus in the tubes was discharged from the greatly distended ostium. Recovery followed. In connection with this case is described a case of apparently gonorrheal infection of the peritoneum in which the gonococci could not be demonstrated. The patient recovered. As compared with the infection as previously described gonorrheal peritonitis has a mild course.

That peritonitis may originate from the migration of bacteria through macroscopically intact intestinal wall was proved by two cases. To explain this occurrence the author made a series of investigations on cases of carcinoma of the rectum in which a preliminary or permanent colostomy was to be established. The technique of the experiments was as follows:

After eversion of the sigmoid or descending colon circular fixation of the serosa to the parietal peritoneum was performed and a strip of gauze 5 to 8 cm. in length was introduced deep into the pocket at the upper or lower end of the suture. In

many cases a strip of iodoform gauze of the same length was added. The wound was almost hermetically closed with a sterile bandage and four days after the opening of the intestines the strips were removed and bacteriologically examined. Patients admitted with ileus and those with dilatation of the portion of the intestine to be resected were excluded. Great care was taken that the intestine was not perforated by the sutures.

Nine such experiments were undertaken. In none were all of the strips found to be sterile. In two cases the inserted strips of iodoform gauze were sterile but the white strip gave positive bacteriological findings. This is proof of the bacterioidal power of iodoform and of the low virulence of the bacteria. The possibility that the white strips may have become infected from the exterior the author will not admit at least for four of the nine cases in which the bacillus coli was found. In these the mere manipulation of the intestines and the low grade circulatory disturbances and congestion made possible the migration of the bacteria through the moderately damaged intestinal wall. The histological changes in the involved portion of the intestine were as follows:

The stroma of the mucous membrane showed a n h infiltration of plasma cells and eosinophiles. The epithelium actively secreted mucus. The superficial coat was almost intact, no ulceration was observed. The submucosa was edematously softened. The lymph and blood vessels were slightly dilated and surrounded by plasma cells and lymphocytes. The muscularis was also edematously softened and showed marked infiltration of eosinophiles. The outer layers were pushed asunder by a young granulation tissue which advanced from the serosa. The section showed no true serosa attached to the muscularis was a layer of young granulation tissue 2 or 3 mm thick which was rich in vessels. Copious fibrin excretion and leucocyte infiltration were present.

In conclusion the author calls attention to the pathogen c similarity of these cases to those of biliary peritonitis without perforation of the gall bladder. The prognosis of cryptogenic peritonitis is poor since there is no possibility of closing the portal of entry of the invading bacteria. In cases in which a fairly localized change is found in the intestine the wrapping of omentum around the intestine at this point might be of value.

COLLEY (Z)

## GASTRO INTESTINAL TRACT

Waljaschko G The R lattrv Po tition of the In  
testines and the Stomach as Determined by  
the Conditio n and Functio n of the Latt (Di  
Synopte d D me d d s St g bed gt d h  
den Zusta d nd d Fu lt d t taze )  
H at h boy Dyd g v 374

From the findings of anatomical research the author comes to the conclusion that according to the

condition of the stomach it is possible to distinguish three basic positions of the stomach with relation to the transverse colon the mesentery and the small intestine

These three types may be distinguished by inflation of a relatively small stomach. With increasing distention of the stomach the greater curvature is displaced forward and to the right and at the same time there is marked expansion downward. As the result of this change the splenic flexure becomes straighter. The change may proceed so far that the phrenocolic ligament becomes tense. Simultaneously the entire transverse colon becomes displaced downward and to the right, the upper loops of the small intestine move from the left to the right and the remaining intestinal loops are displaced downward so that they fill the left side of the pelvis. The entire greater curvature which is bound to the transverse colon by the great omentum (gastrocolic ligament) is attached to the anterior abdominal wall further to the left and right. In addition the colon is bound to the anterior abdominal wall by the mesocolon.

As the omentum is very elastic it may be greatly stretched and will then spontaneously contract. Therefore the transverse colon changes its position with every displacement of the stomach. The mesocolon also may be looked upon in its physiological movement as a passive organ which alters its position according to the extension or contraction of the posterior fold of the bursa omentalis. The position of the small intestine is dependent upon the level of the mesocolon. If the loops of the small intestine are forced downward the upper loops will be displaced to the right and the lower loops downward and more to the left.

These topographical alterations in the organs have their clinical significance. The theory that arterio-mesenteric incarceration of the duodenum is caused by the root of the mesentery cannot be correct since the latter is stretched by expansion of the stomach not downward but toward the right. As a rule the occlusion is produced by kinking of the empty intestine at the juncture of the duodenum and jejunum due to displacement of the upper loops of the jejunum in marked expansion of the stomach to the right.

This condition is responsible also for the deviation to the right of the gravid uterus and of large tumors of the adnexa and for the rotation of pedunculated tumors which usually occurs from left to right. In a case of growing tumor or gravid uterus the loops of the small intestine are crowded upward and thereby displaced to the right they draw the tumor or uterus with them or cause a pedunculated tumor to rotate. When as is usually the case they lie on the anterior surface of the tumor the rotation is from left to right only in rare cases when they lie on the posterior surface is the rotation from right to left. This agrees with clinical experience for torsion of a pedicle is usually from left to right.

VON HOLST (2)



Friedenwald J Gantt W H and Morrison T H  
Studies in Fractional Analyses 1 n Cl M d  
19 4 11 92

The gastric contents are not homogeneous. In the cases studied fractions rapidly aspirated showed a maximum variation of 46 degrees free and 54 degrees total acidity and a minimum variation of 2 degrees free and 2 degrees total acidity. These variations were not affected to any appreciable extent by moving the tip of the tube about the stomach but mixing the contents by withdrawing into the bulb and re-injecting four times 60 c. cm. of the fluid reduced them by 50 per cent. Mixing lowered the acidity especially the free acidity.

Fractions removed by the mixing method day after day at the same hour and under similar conditions showed but moderate daily variation. In 15 per cent of the cases there was no variation and in 85 per cent a variation of only 7.2 degrees free and 14.3 degrees total acid.

The metal bulb had no effect on the secretion of gastric juice. In seventy six cases aspirated one day with the Rehfuess tube and a few days later under similar conditions with the Ewald tube the deviation was generally small. When the Rehfuess tube was used the free acid averaged 26.5 degrees and the total acid 47.5 degrees while with the use of the Ewald tube the corresponding values were 5.7 degrees and 42 degrees.

In tests of the Sippy ulcer cure on gastric acidity the authors found that the average acidity was increased after treatment by 25.8 per cent free and 19.3 per cent total acidity. Cases were tested before treatment and from four to six weeks after treatment. After treatment 44 per cent showed an average acidity higher by 0 degrees free and 19 degrees total acidity and 22 per cent an average acidity which was lower by 16 degrees free and 14 degrees total acidity. In 34 per cent the values varied irregularly.

The authors conclude that if the entire contents of the stomach are to be aspirated the mixing method should be used but they agree with Lockwood and Jacobson that as the tube rests near the pylorus small fractions give fairly accurate information regarding gastric secretion. M L M 304 MD

Walton A J The Differential Diagnosis of the Surgical Dyspepsias P 11 n 39 4 Cx 149

The author deplores the fact that very often in cases of surgical dyspepsia a short-cut diagnosis is taken. The history and the physical examination are often ignored and an X-ray examination or more rarely a test meal is looked upon as the sole means of investigation. Often a patient is referred with a note that gastric symptoms are present which have not yielded to one or two weeks of medical treatment and an X-ray examination being requested to determine whether an ulcer is present. In such cases a carefully taken history and an examination will often make it evident that the patient has gall stones or large abdominal tumor. The study of a case should in-

clude a physical examination a test meal and an X-ray examination and most important of all the history. Next in importance to the history is an X-ray investigation carried out by a skilled roentgenologist.

In the case of a patient over 40 years of age who has previously been free from symptoms of dyspepsia and who complains of indigestion present for more than three weeks carcinoma of the stomach must be considered. If in the case of a woman the symptoms date back to early childhood the patient may be suffering from ptosis. The characteristic periodicity noted in the symptoms of a gastric or duodenal ulcer are so distinct from the long continued constant slight discomfort of gall stone dyspepsia that in a typical case there is usually no difficulty. The more acute gastric lesions give rise to pain which although widespread in the epigastrium does not as a rule radiate beyond it. In the more chronic gastric conditions the pain radiates widely to the back and shoulders. The radiation will generally be more pronounced when the pain is severe and is increased when the ulcer is adherent to the surrounding tissues. If the pancreas is involved the pain will often pass to the left shoulder while as involvement of the undersurface of the liver usually gives rise to pain radiating to the right shoulder. Involvement of the small intestine such as is seen in cases of gastrojejunal ulcer is generally indicated by radiation downward and to the left iliac fossa. Appendiceal dyspepsia will at some time give rise to pain radiating to the right iliac fossa. The colic pain associated with ptosis usually radiates to the lumbar region.

In the case of a benign gastric lesion the time of onset of the pain is directly proportional to the distance of the ulcer from the cardiac orifice. In cases of carcinoma of the stomach on the other hand the pain is constant but may be aggravated shortly after the ingestion of food. The discomfort of gall stones is characterized by the fact that it occurs immediately after or even before the meal is finished. In cases of viscoperitonitis there may be a fullness immediately after meals but generally the discomfort is more pronounced toward the end of the day and when the patient is tired and is relieved by the recumbent position. Carcinoma of the stomach rarely causes acute pain unless there is obstruction or involvement of some other viscus. Chronic ulceration often gives rise to severe pain which frequently is relieved by pressure on the epigastrium. In cases of duodenal ulcer the pain is very often severe enough to awaken the patient at night. The colic as in cases of gall stones is of extreme severity and not infrequently associated with collapse. Attacks of this nature will often occur irregularly and appear to have no definite cause. Somewhat similar attacks lasting for a shorter period not infrequently occur in chronic pancreatitis but in such cases they often bear a more definite relationship to the ingestion of food. The pain of an acute inflammatory condition of the gall bladder or appendicitis is more persistent and associated with pyrexia.

Two main types of vomiting may be distinguished. In one which is due to irritation of the stomach the quantity of vomitus is small and the vomiting is frequently repeated. In the other which is due to some form of obstruction the quantity of vomitus is greater unless the obstruction is high up the attacks occur at longer intervals and usually the returned material contains food which was ingested a relatively long time before. Therefore very frequent vomiting of a small quantity of material indicates an acute gastritis such as is more apt to be found with acute ulceration than a chronic ulcer. Lesions which give rise to symptoms of inflammation but are situated outside of the stomach will cause only infrequent vomiting hence vomiting occurs only occasionally in cases of gall stones and appendicitis. A duodenal ulcer practically never causes vomiting unless its upper margin involves the stomach or it has caused obstruction. In cases of obstructive lesions of the pylorus whether simple or malignant the quantity of vomitus will be large. When in cases of hour glass stomach the proximal sac is small vomiting may be more frequent and much less characteristic.

The presence or absence of hæmatemesis and melæna is of very little aid in the differential diagnosis. It is never justifiable to wait for the presence of hæmatemesis or melæna in order to make a diagnosis of chronic gastric or duodenal ulcer.

Changes in the appetite are often of very great diagnostic value. When a person over 40 years of age has symptoms of dyspepsia associated with loss of appetite it is very probable that he is suffering from carcinoma of the stomach. On the other hand persons with duodenal ulcer and not infrequently those with chronic gastric ulcer are found to have a perfectly normal appetite. Ptoisis and acute gastritis which more commonly simulate an ulcer are much more apt to be associated with loss of appetite. In fact the loss is associated with ulcer only if gastritis is also present.

Loss of weight is a sign to which much attention is paid unjustifiably. It frequently occurs late and should never be awaited. It is by no means suggestive of carcinoma since a person with pyloric stenosis or obstruction of the common duct or chronic pancreatitis may lose weight with startling rapidity.

Jaundice associated with other symptoms of dyspepsia is a definite indication of obstruction of the common bile duct but a differential diagnosis between stone in the common duct, chronic pancreatitis and pressure upon the duct by an external neoplasm can be made only by taking other symptoms and signs into consideration. The absence of jaundice is not positive evidence that the common duct is free.

The general build of the patient is often suggestive of the lesion from which he is suffering. A young female with well marked ptoisis habitus is very unlikely to be suffering from a chronic gastric ulcer. A well-developed muscular man complaining of long

continued dyspepsia is much more apt to have an organic lesion of the stomach or duodenum whereas many stout women past middle life who have had dyspepsia for a number of years are suffering from gall stones.

An abdominal examination will often present no positive characteristic signs but the absence of physical signs is in itself often of very great significance. An enlarged and palpable gall bladder, a hard irregular tumor in the region of the stomach or a dilated stomach with visible peristalsis are manifestly physical signs of great importance but it must be remembered that the absence of enlargement of the gall bladder does not prove that stones are absent.

An investigation of the gastric secretion is a test of very great value but may give rise to an erroneous impression unless it is combined with a carefully taken history and clinical investigation. Of the two methods a fractional test meal is of the greater value.

One of the most important aids in the diagnosis of dyspepsia is a careful X-ray investigation but unfortunately the laity have received the impression that this is the only test and as a result persons with a distinct and characteristic history of ulcer or gall stones often refuse operation because the X-ray findings are indefinite or negative. A chronic ulcer on the posterior surface of the stomach may cause no characteristic pit or depression. Carcinoma of the stomach not infrequently gives rise to a very characteristic picture but occasionally and especially if the growth is in the lundus of the stomach the X-ray may entirely fail to reveal it.

JONAS E. DIX M.D.

Jackson C. Pyloroscopia 52 Clin. W. 1m 924

Jackson has found peroral pyloroscopia with an ordinary open tube a practicable procedure in the cases of infants and young children. In the cases of adults a lens system in the gastroscope is usually necessary.

At the Philadelphia Bronchoscopic Clinic the exploration of the first two thirds of the stomach is a common procedure. In the cases of very young children the displacement required to bring the pylorus over to the middle line for inspection with the gastroscope is easily accomplished by external abdominal manipulation by an assistant. This permits inspection of the pylorus. Duodenal folds are sometimes seen in adults as well as in children. In the majority of the cases the open tube esophagoscope is used the stomach folds being examined in the collapsed state of the stomach. In some instances it is found advantageous to use the inflatable gastroscope.

The author describes the case of an 11 month-old child who had swallowed a safety pin. The pin had lodged at the pylorus. It was removed through the gastroscope without the use of an anæsthetic.

OSCAR E. NABZAU M.D.

plin F. Pyloroduodenal Stenoses Due to Biliary Lithiasis and Their Surgical Treatment (Les stenoses pyloroduodénales dues à lithase biliaire leur traitement chirurgical) *J. de ch.* 1924, xxi, 1.

Cases are occasionally seen in which a condition of frankly biliary origin results in a true mechanical stenosis of the pylorus and duodenum cicatricial adhesions enclosing calculi in the pyloroduodenal region etc. Such cases are not relieved by cholecystectomy.

They are not the ordinary gastropathies accompanying cholelithiasis nor cases of pyloric stenosis due to the pressure of a gall bladder loaded with calculi in which removal of the gall bladder would end the pyloroduodenal condition. They require a gastro-intestinal operation. Papin reports a case of this kind and reviews a few others from the French literature. In all the symptoms of pyloric or duodenal stenosis dominated the clinical picture but the history suggested biliary lithiasis. Kehr found twenty-two such cases in 1,000 gall stone operations.

The most common pathogenesis and that associated with the most marked complications is pericholecystitis which blocks the pylorus and duodenum by dense adhesions and strangles the passage way by bands or fibrous cords. Such a pericholecystitis often forms a veritable tumor causing great surgical difficulty. The coincident results are thickening and induration of the duodenal wall and hypertrophy of the head of the pancreas.

In the treatment there are three possibilities: (1) a gastro-enterostomy alone, (2) a biliary operation alone or (3) cholecystectomy with gastro-enterostomy.

In a case of enlarged gall bladder filled with calculi adherent to and compressing the pylorus and duodenum, cholecystectomy is the best treatment.

In obstruction due to pericholecystitis the choice of treatment will depend upon whether the condition is in the course of evolution or is the sequela of an old lesion. If the condition is cholecystitis in process of evolution its treatment by the usual methods may relieve the pyloric stenosis but as a rule cholecystectomy is the operation of choice. After this procedure the duodenopyloric wall resumes its suppleness and permeability.

In cases of residual lesions the indication is for gastro-enterostomy with section of adhesions. Removal of the atrophic gall bladder is useless.

A gastro-enterostomy is to be preferred also when the cause of the stenosis is doubtful and when the patient's resistance is weak.

The double operation, cholecystectomy and gastro-enterostomy has rare indications. On account of its gravity it can be performed only when the patient is in a relatively good condition.

W. A. B. FENN

Poynton F. J., Higgins T. T. and Bryd on J. M. The Treatment of Hypertrophic Pyloric Stenosis. *Lancet* 1924, cvi, 5.

The authors' conclusions based on a series of fifty-five surgically treated cases and a long experience

in children's hospitals are summed up by the sentence: "When once the diagnosis has been made operate at the earliest convenience."

Of the classical symptoms projectile vomiting, visible peristalsis, tumor and constipation the tumor is the most important. In discussing the examination the authors emphasize the necessity for complete relaxation on the part of the examiner as well as that of the patient. In the cases reviewed the tumor was demonstrated before operation in all but two and all pre-operative tumors were found at operation.

The pre-operative care advised consists of gastric lavage and the subcutaneous administration of saline solution and glucose. The limbs are wrapped in cotton and the operation is performed in a particularly warm room.

The surgical procedure recommended is the Rammstedt operation. The authors prefer nitrous oxide oxygen anesthesia. Frequently this is combined with local infiltration with novocaine and adrenalin and in some cases with local infiltration alone. Stress is laid on the importance of blunt section of the pyloric sphincter, the careful control of bleeding and gentleness and dexterity of handling. The operation can be completed in about ten minutes.

The postoperative treatment consists in keeping the infant warm, treating hyperpyrexia with ice caps and careful feeding. The feeding routine for both breast and bottle-fed infants is described in detail.

In a series of fifty-five cases treated during a period of four years the mortality was 20 per cent. This represents an average in the thirty-five cases treated during the last two years the mortality was just under 15 per cent.

The factor of paramount importance in the operative prognosis is the duration of the symptoms. In the cases with symptoms for fifty days the mortality was 63.9 per cent; in those with symptoms for from twenty-five to fifty days it was 38.5 per cent; and in those in which the symptoms had been present for less than twenty-five days it was 6.4 per cent.

W. L. MASON, M.D.

Bedard, N. A. The Experimental Production of Gastric Ulcer (Podopernim: titel des Artikels) *Arch. Surg.* 1924, 94, 1209.

Bedard reviews the literature on the experimental production of gastric ulcer. In a number of experiments on rabbits he attempted to obtain a chronic lesion of the gastric mucosa by producing paralysis of the fine motor nerve terminals in the gastric wall. Into the muscle stratum he injected a solution of neurine which is known to have a specific action on the nerves of striated muscle. Eleven experimental injections were made under strictly aseptic conditions. The work was based on the hypothesis that muscular and secretory paresis and the resulting circumscribed altered trophism of the gastric wall would so modify the tissue as to produce and maintain a state of chronic ulceration while

about it and beneath it there would be a fibrous reaction

The experiments showed that small injections of 25 per cent neurine into the muscular or submuscular stratum of the stomach constantly produced a lesion which after a period of about eighteen hours consisted in a loss of mucosal substance and after a period varying from seventy to two hours to twenty four days developed into an ulcer

The ulcer produced involved the various strata of the wall. It was surrounded and infiltrated by newly formed connective tissue and on microscopic examination showed the characteristics of a fibrous ulcer

The cause of this lesion must be sought in the typical action of neurine in paralyzing the motor terminals in the muscles and the sensory secretory plexuses of the submucosa. Therefore the experimental ulcer was a true neurotrophic lesion

W. A. BRENNAN

Jusnetzoff N. W. Regurgitation of the Duodenal Contents into the Stomach in Cases of Gastric Ulcer (Ueber die Rückführung des Duodenalinhalt in den Magen beim Ulcus ventriculi) *Verhandl. d. R. s. Ch. Kong. Petr. grad.* 1913

A study of regurgitation of the duodenal contents into the stomach which is of great interest from the standpoints of physiology, diagnosis and pathology was found to present many difficulties. These were overcome only by the use of gastric sounds of small caliber which could be allowed to remain in the stomach. The examination of the duodenal juices in the stomach included the macroscopic and chemical determination of bile by the methods of Huppert, Nakayama and Slowzoff. Trypsin was determined by the serum tube method. The gastric contents were neutralized with sodium hydroxide and brought to 0.2 per cent sodium carbonate. Calcium chloride was used as an activator. The juice to be examined was placed in the thermostat at from 37 to 39 degrees for twenty four to forty eight hours. The research was carried out in the Obukhov Hospital and in the chemical department of the Institute of Experimental Medicine.

In all 150 examinations were made in ninety five cases. Twenty five were repeated from two to five times. The greater number were made in the cases of ulcer. As a stimulant a 10 per cent oil emulsion was employed and when examinations were repeated fish soup water and 1 per cent soap solution were also used. The gastric contents were siphoned off every fifteen minutes during a period of four or five hours.

It was found that there is no parallelism between the regurgitation of bile and that of pancreatic secretion. Hence the regurgitation of bile cannot be regarded as having the same significance as that of the pancreatic secretion. When the cases are tabulated according to the regurgitation of bile it is seen that in the greater number the regurgitation began early (after three quarters of an hour one

hour or one and one half hours) and continued to the end. Other common types were those in which the regurgitation was observed in the middle of the examination, those in which it occurred intermittently and those in which it was noted in the first test and continuously thereafter or ceased shortly before the end of the examination.

The interrupted type with increased acidity is often associated with pyloric or duodenal ulcer.

The regurgitation in cases of gastric ulcer does not differ from that in other diseases of the stomach; this indicates that the typical theory of the origin of gastric ulcer is incorrect. SCHAAK (Z).

Sherren J. Disease of the Stomach and Its Surgical Treatment. *Lancet* 1924 cc 1 477

Perforation of a gastric or duodenal ulcer is usually preceded by a long history of characteristic ulcer symptoms and the accident has often occurred while the patient was having ambulatory medical treatment. Sherren believes that surgery will effect a cure in the majority of cases and that patients who remain without symptoms for two years after operation never develop them later. He has found that in the rare cases of severe symptoms six, eight or more years after operation the first two years were never uneventful. The results of partial gastrectomy for chronic gastric ulcer are remarkable; he has never known secondary ulceration to follow and the after history seems to be singularly smooth.

There is both clinical and pathological proof of the healing of ulcer. In all of thirty-one cases of chronic duodenal ulcer and twenty five of chronic gastric ulcer examined up to twelve years after operation the ulcer had healed. Occasional failures to obtain a cure will continue to occur until we know definitely the cause of gastric and duodenal ulcers.

Acute ulcers of the stomach frequently cause pain, vomiting and hæmatemesis especially in young women. The ulcers cannot be seen on external examination of the stomach and often cannot be found when the mucous membrane is directly inspected during life or after death. The author believes that acute ulcer is often followed by the chronic variety and the latter by carcinoma. He states that operation should never be performed in acute cases with hæmatemesis because the acute ulcer cannot be dealt with directly. Gastro-enterostomy will not check the bleeding and operation adds enormously to the mortality. The treatment should consist of rest, the administration of morphia and plenty of water by mouth. Operation should be undertaken in a quiescent period when removal of an infected gall bladder or appendix will effect a cure.

The relationship between acute ulcer, the relapsing ulcer and the solitary chronic round ulcer is discussed. The latter is the well known penetrating ulcer which often involves the pancreas. It rarely causes hour glass stomach but is the type that is the precursor of malignant disease. The relapsing type is more common in women and gives rise to hour glass deformity.

Hourglass stomach is rarely followed by carcinoma and is relatively infrequent in men. In fact ulcer is apparently becoming a more common disease in women.

There is evidence that gastric and duodenal ulcer are often familial. Probably this is due to the fact that disease of the appendix tends to run in families.

Secondary ulceration after operation may be due to several causes but we know that chronic ulceration does not occur if operation permanently abolishes free hydrochloric acid in the gastric juice. The author believes that the effect of gastrjejunostomy is physiological or chemical instead of purely mechanical. In the development of secondary ulcers increased gastric acidity is a most important factor. These lesions are very rare after operations for gastric ulcer. Prevention of secondary ulceration is favored by the removal of all foci of infection, the avoidance of the use of unabsorbable suture material and the jejunal clamp and the formation of a large anastomosis at a distance from the pylorus.

VERNE G. BORDEN, M.D.

Basset A. The End Results in Cases of Perforated Ulcer of the Stomach and Duodenum (Les résultats finaux dans les ulcères perforés de l'estomac et du duodénum). *Bull. et mém. Soc. nat. d'Ch. d'P.* 1941; 24.

Basset has collected thirty case reports giving the results of operation for perforated gastric or duodenal ulcer. The period of observation ranged from one to eighteen years. The end result was excellent in every respect in 66 per cent, mediocre in 24 per cent, and poor in 10 per cent.

In all of the five cases in which the lesion was situated on the anterior wall of the stomach the result was very good. In the eight cases in which the ulcer was on the lesser curvature the result was very good in four, fair in three, and poor in one. In the cases of pyloric perforations it was very good in 10 and fair in two. In the thirteen cases of duodenal ulcers it was very good in nine, mediocre in two, and poor in two.

The results with regard to the type of operation are shown in the following table:

Operat n	Res lt		
	Cases	Good	Fair Poor
Simple b l f p e r a t o	7	3	3
Burial t p e r f o r t n d g a s t r o enterostomy	6	3	3
Simple s t r e	3		
S t u e a n d g s t r o e t r o s t o m y	5	5	
E c i s i o n a d s u t r e			
E c i s i u t u e a n d g a s t r o e t r ostomy			
Thermocauterizat on a d s t r	5	4	
Pylotomy			

In the twelve cases in which immediate gastroenterostomy was done a good result was obtained in nine and a mediocre result in three. In the eighteen other cases the result was good in eleven, mediocre in four, and poor in three.

The manner in which the stomach is evacuated in patients with a gastroenterostomy was determined in ten cases (nine cases of primary and one case of secondary gastroenterostomy). The gastric contents passed exclusively by the gastroenterostomy in five and chiefly by this route in two.

From this series of cases it appears that the site of the ulcer is of importance in the end result. Next to cases of ulcer of the anterior wall, in all of which the outcome was good, the most favorable results were obtained in cases of duodenal ulcer. In the cases of ulcer of the lesser curvature and of the pylorus the results were satisfactory in only 50 per cent, and in those of callous ulcer they were good in only 33 per cent.

The operation giving the best results is suture with immediate gastroenterostomy.

One fourth of the patients operated upon have had some complication such as hemorrhage, stenosis, peptic ulcer, or repeated perforation, which necessitated further surgery, but after the second operation recovery was complete and lasting.

W. A. BRENNAN

Cohn L. C.: Pylorotomy Followed by Gastroenterostomy. *A. S. S.* 1924; 1: 119.

The author calls attention to the Kocher method of gastroduodenostomy and to the infrequency of its use in America. Since the technique is comparatively simple and the results are usually excellent, he considers it advisable to bring it again to the attention of the American surgeon. In brief, the technique used by Cohn is as follows:

The stomach is freed along the greater curvature down to the duodenum, and the stomach, pylorus, and duodenum are freed from the pancreas. The pyloric vessels are ligated and the duodenum is cut across, care being taken not to injure the duodenum with the clamp. The stomach is turned down and to the left with removal of the gland-bearing area and ligation of vessels.

If the duodenum can be sutured to the posterior wall of the stomach without tension, Kocher's operation is done. An area on the posterior wall above the site of section is chosen and the serous coat of the duodenum is sewed to the serous coat of the stomach with silk. An incision is then made in the wall of the stomach down to the mucosa and the wall of the duodenum is sewed to the wall of the stomach with silk. The mucosa of the stomach is then cut through and sewed to the duodenal mucosa with a suture running all the way around and the previous sutures are completed. The stomach is then divided between clamps and closed in the usual way.

JOHN A. WOLFE, M.D.

Balfour D. C.: Partial Gastricotomy for Gastrojejunal Ulcer. *A. S. S.* 1941; 1: 386.

Of greatest importance in surgery for peptic ulcer is provision for adequate drainage of the stomach. This principle accounts largely for the popularity

of gastro-enterostomy. The results of gastro-enterostomy are usually satisfactory. The most serious sequel, gastrojejunal ulcer, occurs in about 2 per cent of cases. The cause is uncertain but the condition is easily recognized. Early operation is safe and satisfactory but postponement is dangerous. Several methods of treatment have been employed in the Mayo Clinic such as (1) excision of the ulcer when it is small with enlargement of the original anastomosis (2) cutting off of the gastro-enterostomy, excision of the lesion, closure of the openings in the jejunum and stomach and pyloroplasty and (3) partial gastrectomy which has distinct advantages and is the operation of choice when it can be safely performed.

A course of pre-operative treatment is usually of benefit and it is advisable to perform as much of the operation as possible under ethylene or local anesthesia. The anastomosis is first mobilized, the gastro-enterostomy disconnected, any induration in the jejunum is excised and the opening in the jejunum is closed. If there has been a fistula into the colon this is closed and protected as well as possible by wrapping omentum around the involved segment of bowel. The stomach is then resected to a point well above the opening of the old gastro-enterostomy and gastro-intestinal continuity is restored by whatever method is best in the particular case.

The author has performed partial gastrectomy for gastrojejunal ulcer including its complications, colon fistulae etc. in twelve cases with no mortality.

**Michon and Magrou. Spontaneous Regeneration of the Gastric Mucosa After Partial Resection.**  
(Revue française de chirurgie et de médecine expérimentales, 1944, 31, 89.)

The authors carried out experiments to determine whether partially resected gastric mucosa is capable of spontaneous repair and whether the healing is a true regeneration of the mucosa.

It was found that in the dog a lesion made surgically in the healthy gastric mucosa becomes repaired spontaneously. This repair is rapid whatever the size of the lesion, being complete by the end of seven months. Retraction of the musculature has no part in the process. It is a true regeneration of the mucosa. At first simple epithelium is formed. Later this shows simple crypts and ultimately the secretory glands appear.

Beneath recently repaired portions of epithelium the muscularis mucosae is defective.

W. A. BRENNAN

**Cheever D. Person. Experience with Carcinoma of the Stomach.** (J. M. & S. J. 94, 4.)

Many physicians are very skeptical regarding the curability of carcinoma of the stomach and this belief is based more or less soundly on unfavorable experiences. Public education regarding the common phenomena of other varieties of cancer has led

to earlier operation. Even when the lesion announces itself as a visible tumor or ulceration associated with pain, bleeding or unnatural discharge, a certain percentage of so-called cures may be confidently anticipated. Breast cancer and malignancy of the lip and uterus are now not as hopeless as formerly because today they are diagnosed and treated at an earlier stage.

In cases of cancer of the stomach the surgeon is dealing with an organ which should offer a higher percentage of cures. Many partial and total gastrectomies have demonstrated that the stomach is not essential to the maintenance of even a fair degree of good health. Its anatomical position and accessibility and the technical ease of its resection render gastric surgery relatively simple. Moreover, the gastric contents are relatively sterile as compared with the contents of the colon.

The natural history of gastric cancer is the history of cancer elsewhere in the body. Beginning as a strictly local lesion it spreads by direct invasion of the surrounding tissue. Later lymphatic and blood stream dissemination may render the case inoperable. In 77 per cent of sixty-seven patients operated on at the Peter Bent Brigham Hospital Boston the liver was free from metastases but on account of lymphatic dissemination only half of these patients could be given the benefit of a radical resection. Autopsy records from the same hospital showed that of the patients dying of gastric cancer without operation 22.8 per cent were free from hepatic metastases. Accordingly, early liver involvement is not responsible for the failure of radical operation to effect a cure.

In a series of 236 cases treated at the Peter Bent Brigham Hospital during the first ten years of its existence a radical operation was possible in only 9.7 per cent yet in more than 50 per cent of these the duration of symptoms prior to admission was less than six months. It is the old story of fatal delay in resorting to curative measures. The symptomatic insidiousness of gastric cancer is almost unbelievable. When attacked by cancer the stomach often remains silent during the fateful period when surgical treatment holds out a fair prospect of cure.

The author reports six cases all with unusually short duration of symptoms such as weakness, anorexia, weight loss, pallor, backache and general debility. Such symptoms do not warrant a diagnosis of the true pathology. When the classical picture is established it is usually too late for operative interference. To remedy this serious situation it is important that a careful and thorough examination be made of all patients complaining of belching, discomfort after the ingestion of food, anorexia, nausea, vomiting and weakness. By far the most important single diagnostic method is examination with the fluoroscopic screen and a study of X-ray plates. Dependable evidence may be obtained in this way in as high as 97 per cent of the cases.

Of 236 patients at the Peter Bent Brigham Hospital whose data were satisfactory 124 (52.5 per cent) were found inoperable on physical examination and twenty four more (10.1 per cent) were found inoperable at exploratory operation. Fifty three (22.4 per cent) were subjected to a palliative operation for obstruction or perforation in these cases the mortality was 13.2 per cent. In only twenty three cases of the series was a radical resection done. Twenty patients survived four lived less than one year, six lived from twelve to eighteen months, two lived from two and one half to four years and one lived seven years. In three cases (1.3 per cent) a five year cure was obtained.

Of the author's twelve patients subjected to the radical operation for gastric cancer two died from the operation, six died of recurrence after an average period of twenty three months and three are alive and well seven years and three months, six years and six years and three months respectively after the operation. A six year apparent cure was therefore obtained in 25 per cent. From his limited experience Cheever concludes that gastric cancer is not so hopeless as is commonly believed.

JOHN W. NICHOL, M.D.

**Haberer: The Indications for Surgical Treatment of Malignant and Benign Lesions of the Stomach and Duodenum.** Published on 1432 Cases (Indikation für chirurgische Behandlung bei bösartigen und gutartigen Erkrankungen des Magens und Duodenums auf Grund eigener Erfahrungen 1432 Fälle). *S. 331. Zuss. f. Abh. d. d. Ch. b. d. Land. ges. u. St. f. u. ch. f. A. h. 1933. 1. 5.*

Haberer has operated upon 1432 cases. Of these operations 1057 were gastroduodenal resections, 303 gastro-enterostomies and seventy two pyloric exclusions. Of 1223 operations for benign lesions (all most exclusively ulcers) 910 were resections, seventy two were pyloric exclusions and 222 were gastro-enterostomies. For carcinoma Haberer performed 128 resections and eighty-one gastro-enterostomies. The latter were almost always posterior operations with the shortest possible loop. The pyloric exclusions were done by the von Eiselsberg method. The Billroth I method was employed in 520 cases (in forty three for an end to side anastomosis between the transverse gastric incision and the descending portion of the duodenum after previous blind closure of the end of the duodenum). The Billroth II operation was done in 410 cases (the Reichel-Holmeister modification being used in the majority).

Haberer is decidedly radical in his treatment of carcinoma of the stomach performing a resection even in the presence of inoperable metastases in the glands.

The causes of death following operation for ulcer are: (1) loosening of the sutures, (2) hemorrhage, (3) bronchial atrophy of the heart, (4) diseases of the lungs and pleura and (4) subphrenic abscess. Loos-

ening of the sutures may be due to errors in technique resulting in insufficient nutrition of the wound surface or hemorrhage within the suture line. It may occur also even when the suturing is done correctly. Therefore the author recommends separate suturing of the large vessels of the mucosa. In very rare cases of extremely cachectic patients the suture may give way in spite of correct technique because of faulty union and healing. The fact that loosening of a primary suture occurred only three times in Haberers 1432 cases shows that this disastrous complication is extremely rare. The digestion of a primarily healed suture by activated pancreatic secretion following injuries to the pancreas during operation is a grave danger. In such cases the clinical phenomena of separation of the suture line do not appear until after from ten to fourteen days or even longer and during this time the patient appears to be progressing favorably. Either necrosis of pancreatic fat occurs soon after operation or circumscribed abscesses develop very slowly especially around the duodenal stump. Such abscesses are usually fatal.

Hemorrhage into the gastrointestinal lumen may be very dangerous but is rare if the technique of suture is correct. Haberer has had only one case in which such a hemorrhage caused death. In ten cases a second laparotomy was necessary either on the same day or the next day. Healing was obtained in these cases by a second suture.

Cardiac and pulmonary complications which were very rare in Haberers experience may result from aspiration during narcosis or gastric lavage chilling of the viscera or previously present tuberculosis or bronchiectasis. The theory that pulmonary complications are more frequent after operations performed under general anesthesia than after those performed under local anesthesia is not substantiated by the author's experience. On the contrary the most severe pulmonary complications followed the use of local anesthesia. It must be borne in mind however that he used local anesthesia only when complications such as goiter and diseases of the heart, lungs or kidneys were already present. The belief that greater difficulty in clearing the air passages is experienced after narcosis was also refuted by Haberers observations. He found that after local anesthesia patients complained for a considerable length of time of pain in the region in which the narcotic was injected. This was distinct from that due to the wound and had an unfavorable influence on expectoration.

Slight postoperative metaphoric empyema has a relatively good prognosis. When it is recognized early it can be cured by puncture. The prognosis of pleural suppuration caused by the lymph vessels from an infected peritoneum is much less favorable especially in cases of carcinoma. The author has never seen this complication after resection for ulcer but it occurred once after gastro-enterostomy in a case of large callous ulcer of the duodenum.

Subphrenic abscesses due to incorrect suture have a very unfavorable prognosis but that of abscesses developing from infected hæmatomata in which the suture remains intact is much more favorable. Since there is always the danger of pancreatic complications in cases of ulcers which penetrate deep into the head of the pancreas and involve the bile passages only a gastro-enterostomy should be done in these cases. Haberer obtained the best immediate and permanent results with the Billroth I method but does not insist on this procedure. If in the resection of a duodenal ulcer penetrating the pancreas it is impossible to obtain suitable serosa on the posterior wall the Billroth II method or Haberer's modification of the Billroth I method (end to side anastomosis of the stomach and duodenum with blind closure of the end of the duodenum) should be used.

Haberer is not satisfied with the results of transverse resection of the stomach. In no considerable percentage of his cases there was a recurrence of trouble such as increased acidity, pylorospasm and possibly ulcers which had escaped detection. When patients who have been subjected to the Billroth II operation complain of dyspepsia soon afterward the cause usually lies in the altered chemistry of the stomach (flow of bile into the stomach). The end results in these cases however are good. Severe and lasting symptoms of dyspepsia with anacidity may be due to a small stump, very extensive resections are therefore inadvisable. Peptic jejunal ulcer following the Billroth II operation is not a very rare complication as was formerly assumed. Haberer operated on five such cases, in two he himself had performed the primary resection. The best results were obtained with the old Billroth I method. The new ulcer symptoms sometimes observed by other surgeons following the Billroth I operation are due to old ulcers overlooked at the first operation.

Stenosis at the site of anastomosis which some times follows the Billroth I procedure is also to be attributed to faulty technique. In a large percentage of pyloric exclusions done according to the von Eiselsberg technique there is danger of a subsequent peptic ulcer of the jejunum; however favorable the immediate result. Haberer reports thirteen such ulcers in seventy two cases of pyloric exclusion. That simple gastro-enterostomy does not in many cases bring about the desired result is shown by the fact that in Haberer's cases in which resection was done gastro-enterostomy had been previously performed by other surgeons. Haberer warns against performing gastro-enterostomy when the findings at operation are uncertain or negative. In such cases it is usually followed by a continuation or an increase in the symptoms.

Haberer claims that carcinoma on an ulcer basis is rare but states that in 5 per cent of his cases in spite of his extensive experience it was impossible to decide at operation whether the lesion was a carcinoma or a callous ulcer. In peptic ulcer of the jejunum he obtained the best results from very

radical resection. For cases of perforated ulcer he advises resection if it is possible. BATTERT (Z)

JACKSON C. A Chalk Talk on Gastrostomy. *S. G. Cl. V. Am.* 1924 IV 8.

Although Jackson has never performed the operation under discussion he has seen the results of more than 1000 gastrostomies performed by other surgeons.

Before gastrostomy is performed the œsophago-scope should be passed to determine the extent of the lesion and treatment with the use of this instrument should be tried. Cases cured by dilatation are cited.

Gastrostomy is contra indicated in all cases in which a cure can be obtained quickly by œsophagoscopic methods alone provided the patient is not in an extremely poor condition.

œsophagoscopic examination should precede every form of treatment except gastrostomy for water starvation. Blind methods undertaken without knowledge of the condition of the œsophagus are exceedingly dangerous. Nearly every pathological museum has one or more specimens showing œsophageal perforation due to blind bouginage.

OSCAR E. NADEAU, M.D.

SKIJAROW I. Volvulus of the Small Intestine. Sixteen Cases (Über den Volvulus des Dün- und Mittelgrundes von 16 Eigenbeobachtungen). *I. & d. R. Chr. K. g. P. t.* grad 1913.

Volvulus of the small intestine is one of the most frequent causes of intestinal occlusion in Russian peasants.

The high mortality after operation is due to the fact that operation is frequently performed late. In addition to the signs of other types of intestinal occlusion a splashing sound is noted during the first few days; this is pathognomonic. A large quantity of water collects in the excluded intestine; the body becomes drained of fluid and the effects of the toxins are increased. The mortality is greatly lessened by surgical treatment given during the first forty-eight hours. At operation the intestine should be emptied. By smoothing it between the fingers the contents may be rooved into the cæcum without causing injury.

Before and after operation infusions of salt solution should be given to combat the dehydration. To prevent intestinal paralysis the subcutaneous administration of eserin is indicated.

In the discussion of this paper ABRAMOVITSCH (Hemel) agreed with the author regarding the frequency of intestinal occlusion in Russia but warned against his method of smoothing out the intestine to empty it. Instead he advocated puncture of the intestine if necessary. He holds that eversion of the entire small intestine is injurious and unnecessary.

DIEDERICHES (Simferopol) recommended fixation of the flexure in cases of volvulus.

ROKITSKI (Petrograd) reported a case in which after fixation of the flexure according to PINKS



method a second laparotomy for occlusion was necessary. The flexure was then resected by Grekow's method and a cure obtained. Rokitzki also prefers puncture of the intestine to smoothing it with the fingers.

NIKULI (Moscow) stated that he disapproved of reefing sutures in the flexure and anastomosis between its two limbs since in cases so treated the volvulus frequently recurs. He believes the flexure should be resected.

OPPEL (Petrograd) agreed with Nikuli.

HESSE (Petrograd) stated that evagination by Grekow's method is correct theoretically but in practice leaves much to be desired. In this connection he called attention to the fact that it is not yet known how much of the mesentery can be ligated off without exposing the intestine to the danger of gangrene. In one of his cases the entire flexure became gangrenous as a result of volvulus. Following evagination the patient's condition progressed favorably for a time but death occurred at the end of six weeks from gangrene at the end of the descending colon and an abscess between the rectum and the descending colon. In cases of neoplasms of the flexure with stenosis and marked stasis in front of the stenosed area evagination is almost impossible. Hesse reported a fatal case of this type.

SAATCHI (Tiflis) reported that in volvulus of the flexure he always establishes the anastomosis between the transverse colon and the flexure or between the limbs of the flexure. In all of his cases the flexure was very large and resection presented too great a risk. In seven cases treated in the manner described the result was successful; in another a recurrence developed.

SCHAPIRO (Minsk) advocated emptying the small intestine by puncture. In volvulus of the sigmoid flexure he introduces an ordinary rectal speculum high into the intestine for the evacuation of gases and intestinal contents.

TEPLIN (Petrograd) stated that he had operated once according to Pikin's method with a successful result.

AMBRUNJANZ (Beshiza) reported that among the most frequent causes of volvulus are adhesions due to inflammation of the appendix.

WOLLOV (Jadrin) stated that Pikin's operation is not physiologically correct as it immobilizes a movable organ.

GREKOW (Petrograd) proposed evagination per rectum. In this procedure great care is necessary in the ligation of the mesosigmoid as our knowledge of the vascular supply in pathological cases is unsatisfactory. The inflamed and twisted mesentery in volvulus prevents positive orientation; hence the ligation must be made close to the intestine. The portion of intestine freed from the mesentery should be invaginated so far into the pelvic colon that a portion of it with its mesentery disappears into the latter. In the abdominal cavity the fold must be fastened by interrupted sutures. The evaginated portion of intestine including both the outer and

inner cylinders should be cut off and fastened to the rectum and anus. Grekow has used this method in the treatment of traumatic injury of the sigmoid volvulus, Hirschsprung's disease, and neoplasms. The poorest results were obtained in cases of volvulus.

IKERU stated that his operation has not been perfected. He admitted that in many cases reefing sutures are unnecessary; fixation alone being sufficient.

SERJANOW added that he did not insist that laparotomy for volvulus of the small intestine be performed entirely under local anesthesia but when with local anesthesia morphine and ether are used the desired result may be obtained without pain. Smoothing out the intestine between the fingers and evagination he believes are not injurious. After evagination respiration and the heart action are improved.

REIN (Moscow) who concluded the discussion stated that like Grekow he makes a large incision and brings the intestine out as in this manner orientation is facilitated. In volvulus of the flexure he resects both sides if gangrene is present or suspected. If the intestine is healthy he makes a longitudinal incision into the mesosigmoid and sutures this incision transversely. In this manner the mesosigmoid is shortened and the distal extremities of the two limbs of the flexure are moved further apart. DRUCK (Z)

FINSTERER II. Is Extensive Resection of the Stomach in Duodenal Ulcer Allowable or Not? (Ist die umfangreiche Resektion des Magens bei Duodenalulcer überhaupt indiziert?) Zeitschrift für Chirurgie 566

Five years ago Finsterer advised the removal of a large part of the stomach in the resection of duodenal ulcer in order permanently to eliminate the hyperacidity and thereby decrease the chance of the formation of a peptic ulcer. This proposal met with energetic opposition but Finsterer still adheres to his previous conclusions. His conviction is based chiefly on his excellent results—not a single peptic ulcer of the jejunum developed in 233 cases of duodenal resection—and on the findings of the histologic examination of the resected specimens.

In the great majority of the cases the stomach showed the signs of a severe chronic gastritis throughout its entire extent. From this fact Finsterer draws the conclusion that even resection of the antrum is not sufficient to cause healing of the intestine since this procedure frequently leaves behind a severely damaged gastric mucosa which may be responsible for the recurrence of a peptic ulcer of the jejunum in spite of the resection of the pylorus and antrum. In support of his contention he cites the fact that Konjetzky found a severe chronic gastritis in all of his cases of gastric resection.

The patient suffers no noteworthy inconvenience as the result of the extensive extirpation of the stomach. In time the sensation of the so-called small stomach completely disappears provided the anastomosis between the stomach and jejunum is sufficiently broad. DRUCKS (Z)

Von der Huettten F. An Experimental Contribution on the Etiology of Peptic Ulcer of the Jejunum (E peritum ut Be tragt ut Aetiol e d Ulcus pepticum j juni) *Brit kl Ch* 9 3 cxxx 20

The author first reviews the various theories advanced in the literature regarding the nature and etiology of peptic ulcer of the jejunum. None of them is entirely satisfactory as exceptions have been found to all. It may therefore be assumed that a number of injurious influences must act together to produce the lesion. The primary lesion must be a focal injury which forms an area of diminished resistance to the digestive gastric juice.

From his investigations the author concludes that the pyloric swelling resulting from the von Eiselsberg technique favors the development of peptic ulcer of the jejunum and that therefore this procedure should be abandoned. In experimental animals an ulcer does not develop after gastroenterostomy if the pylorus is open. Observations in clinical cases agree with these findings.

Boer (Z)

Paluszay J. The Roentgen Diagnosis of Peptic Ulcer of the Jejunum (Zur Roentgendagnose des Ulcus pepticum jejuni) *Deut h Zsch f Ch* 933 cxxx 203

The author calls attention to the technical difficulties in the roentgen diagnosis of peptic ulcer of the jejunum and adds a new sign to those already described in the literature. This sign is a spastic retraction of the gastric wall in the region of the anastomosis which is not relieved by papaverin. By means of it the author believes he can exclude the presence of a peptic ulcer of the jejunum in the presence of a spasm which is relieved by papaverin.

The direct X-ray signs of peptic ulcer of the jejunum are an ulcer niche and a gastrocolic or jejuno-colic fistula. The indirect signs which are independent of the site of the ulcer are an ulcer diaphragm and a point which is painful on pressure. The indirect symptoms observable in cases of gastrojejunal ulcer are diminished or absent function of the gastro-intestinal anastomosis and spastic retraction of the gastric wall in the region of the anastomosis which is not relieved by papaverin. Indirect symptoms observable in cases of peptic ulcer distant from the anastomosis are faulty peristalsis of the jejunum in the region of the first coil and absence of Kerkring's folds in the region of the efferent loop of the anastomosis.

The article is concluded with the report of nine cases observed by the author. DE. CXS (Z)

Kennedy J P. Tumors of the Intestine Causing Intussusception. *South M & S* 924 lxxxv 43

Hughsmith J D. Ileocecal Intussusception in an Adult Due to an Intestinal Tumor. *South M & S* 19 4 lxxxv 43

Kennedy reports two cases of abdominal distress and vomiting in which operation revealed an in-

tussusception caused by a tumor. In the first case the tumor was a lipoma the size of an apple in the wall of the cecum 2 in above the appendix. Resection of the cecum was followed by a good recovery. In the second case the tumor was a leiomyosarcoma of the jejunum.

Hughsmith reports a case in which adenomatous polyps attached to the ileum about 2 in above the ileocecal valve caused intussusception.

Resection was done. MARCUS H. HOBART M.D.

Stewart W H. Some of the Pitfalls in the Roentgenographic Diagnosis of Colonic Lesions, with Suggestions as to the Proper Method of Overcoming Them. *Am J R ntg* 1924 xi 168

The common errors in the roentgen diagnosis of colonic pathology are due largely to

- 1 Failure to make a preliminary examination before the colon is filled with the barium enema.
- 2 Difficulty in differentiating spasm from true disease.
- 3 The overshadowing of a lesion between haustral contractions by a distended colon.
- 4 Filling defects caused by intestinal contents.
- 5 The variation in the findings at different stages of filling.
- 6 Failure to recognize the pathology on account of the extreme mobility of the lesion.
- 7 Overshadowing by the barium enema of a lesion within the lumen of the colon which has caused no deformity.

With the hope of overcoming these errors Stewart suggests certain improvements in technique. Proper preliminary preparation of the colon is essential. Perfect relaxation of the patient should be induced. A roentgenogram made before the barium enema is given may reveal a lesion which might be overshadowed by the enema. Care should be exercised not to force air into the rectum ahead of the enema. The irrigating can should not be raised more than 9 in above the level of the anterior abdominal wall. The barium enema should be allowed to flow in gently under constant observation until it reaches the cecum when the injection should be stopped. Any unusual roentgenoscopic findings should be verified by a number of roentgenograms. Further examinations should be made after the patient has been instructed to expel a moderate amount of the enema and again after the colon has been emptied as completely as possible. In many instances it is advisable to confirm the findings made with the enema by observations following the barium meal.

In cases in which the lesion is within the lumen of the colon and does not cause deformity the barium enema overshadows the growth so that it cannot be recognized by the ordinary methods of examination. Lesions in such cases can be detected by a method suggested by Fischer of Frankfurt, Germany. He first gives the patient a moderate barium enema and then distends the colon further with air, both of which are administered under roentgenoscopic control. If the suspected growth involves the trans-

verse or pelvic colon the patient is allowed to expel a portion of the enema before the air is injected. With this method it has been found that the most satisfactory information can be obtained in the lateral positions.

When all other methods fail to give the desired information periumperitoneum may be used to advantage.

ABRAHAM H. ARON, M.D.

Romanis, W. H. G.: Carcinoma of the Colon. *J. M. J.* 1941; 183.

Carcinoma of the colon is both common and insidious. It occurs most commonly in the pelvic colon and caecum but not infrequently in the splenic flexure, the transverse colon and the descending colon.

Microscopically the lesions are usually the true columnar type of carcinoma. Clinically they may be classified as the annular or ring type, the proliferating or fungating type, and the hard craggy type. The type influences the extent and scope of the operation since the proliferating type is the least malignant and the hard type the most malignant.

The diagnosis is usually made at operation for acute or chronic obstruction. Earlier symptoms which should justify an exploratory operation in middle-aged patients are colicky pain and uncomfortable sensations after meals associated with loud borborygmi; a history of irregularity in the action of the intestines and blood in the faeces. X-ray examination is usually of no aid in the diagnosis.

Symptoms of obstruction are usually of gradual onset and without acute manifestations such as pain and vomiting. The pulse is good and the tongue clean but the gradual progressive abdominal distention points to the seriousness of the condition.

In considering the treatment the author classifies cases into those with removable or irreparable obstruction and those without obstruction. He warns against performing too radical an operation in cases of obstruction as he believes that unless such cases can be relieved by preliminary treatment the primary operation should be only for exploration and relief of the obstruction. Colostomy should be looked upon as a temporary measure since a short circuit operation when possible is preferable to a permanent colostomy even though it may carry greater risk.

WILLIAM J. SHERIDAN, M.D.

Brunner, F.: Resection of the Colon (Beitrag zur Resektion des Dickdarmes). *Dtsch. Ztschr. f. Chir.* 1931; 106.

This article is based on seventy resections of the colon. Forty of the subjects were women. In two thirds of the cases the operation was performed for carcinoma or tuberculosis; in the others the indications included contusions without injury of the abdominal wall, cecal fistula following appendectomy, ulcer of the colon, incarcerated umbilical hernia, invagination, volvulus, adhesion of the intestines to a carcinomatous ovary, and enteritis.

Observations of forty-two cases of carcinoma of the colon led to the conclusion that the location of the lesion the earlier ileus may be expected. Carcinoma of the colon on the left side proved to be one of the most frequent causes of ileus. Ileus of the carcinomatous colon is especially toxic because of the decomposition of the intestinal contents. In five cases the carcinoma was primarily resected during the ileus; two patients died.

Following Schloffer, Brunner usually makes every effort to cure the ileus first. The anatomical site is revealed by median laparotomy. A fresh incision is then made in the abdomen and a ceco-tomy performed. In two further stages the carcinoma is taken out and the fistula closed. If the intestine is greatly distended, the caecum is drawn up to the abdominal wall and incised and the entire intestine is emptied through the opening. The intestinal incision is then closed provisionally and this part is sutured as a caecostomy into a new abdominal wound mesial to and above the right anterosuperior spine. If the tumor is situated in the right colon, an anastomosis is made if possible between the ileum and the transverse colon and a cecal anus is formed to be resected later with the tumor. An examination is always made of the liver. When metastases are present an artificial anus is formed immediately above the carcinoma.

Among the operative methods Brunner prefers unilateral resection. Of seventy patients forty-seven were subjected to a unilateral operation—twenty-six to ileocolonic resection and twenty-one to colocolostomy on the left side. The only contraindications are ileus, adhesions, and abscesses.

The objection made by Brunner to enterostomy and the establishment of an artificial anus are the impossibility of thoroughness if the procedure is carried out during ileus and the impossibility of a sufficiently radical removal of the glands of the mesocolon. He believes that closure of the artificial anus by the application of a clamp is unsurgical and not without danger. Closure by resection is the safest procedure but represents a second major operation.

With regard to ileocolonic resection by Kocher's method Brunner states that he attaches no value to the so-called aseptic instrumentarium of Moskowitz and Flarert. Implantation of the small intestine into the large intestine is done last in order to prevent unnecessary infection.

Of thirty-two ileocecal resections twenty-six were done as one-stage operations and six as two-stage operations. In disease of the left colon colocolostomy is advisable. Enterostomy is not to be recommended. Of thirty-seven colostomies twenty-one were one-stage operations and fourteen three-stage operations. The mortality was 22 per cent. For operations on the transverse colon and the distal portion of the sigmoid Brunner regards end-to-end anastomosis as the method of choice as it uses up the least amount of intestine. The last one of the chief causes of trouble in circular suture is dissected away from the margins of the intestinal incision and is

about 8 mm wide. The anatomical course of the vessels in the intestines entirely justifies this measure. The prepared margin is treated as though it were completely covered by peritoneum. The margins are joined by two rows of circular sutures. Thus the principle that in intestinal suturing serosa must be applied to serosa is abandoned. Brunner has found that the intestines heal with sufficiently strong union when muscularis is applied to muscularis. Three rows of sutures are not desirable. The sutures should be protected by stitching the omentum over them. When it is necessary to resect both the stomach and colon the transverse colon is first divided between Kocher clamps. The care of the stomach then takes precedence over that of the colon.

In the treatment of caecal fistula the opening is closed with a superficial over-and-over suture. On the following day it is cut around and the skin margins are sutured together over it. Then with clean instruments and after iodine disinfection an incision is made as far as the peritoneum. The fistula is separated from the abdominal wall. The fistulous portion of the intestine is resected and the intestine is closed as after ileocolic resection.

Of eleven caecostomies ten were followed by smooth recovery and one by abscess of the abdominal wall. The results are shown by the following statistics.

Of seventy patients sixteen (23 per cent) died. In the last ten years the mortality has fallen to 13 per cent. The end results in six cases of ileocolic tuberculosis are good. In two cases there is diarrhoea. In twenty-nine cases of carcinoma which were subsequently examined a recurrence developed in thirteen. Seven cases were operated upon less than two years ago. Eight patients (20 per cent) remained cured for more than four years after the operation. LOEHR (Z)

Fraser J and Dott N M. Aseptic Intestinal Anastomosis with Special Reference to Colectomy. *Brit J S* 1924 21 439.

Resection of the colon especially in the descending portion when done as a one stage operation is attended by a mortality of about 30 per cent. The chief danger is from sepsis. Factors predisposing to sepsis are (1) peculiarity of the blood supply (2)

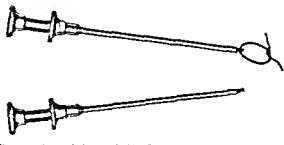


Fig 1. Ligature guillotine. The instrument is 6 cm long and the tubular sheath is 2 mm thick. Projecting from the ends of the solid central wire with an eye in its extremity. The flanges which form the handle of the instrument are arranged like the antenae of a scorpion so that the central wire can be drawn into the sheath. One instrument is prepared with a ligature thread inserted in place. When the flanges are pressed together the ligature is cut again at the end of the tubular sheath. The guillotine can then be released from the ligature until the latter is completely severed.

the highly septic character of the contents of the colon (3) the presence of subperitoneal deposits of fat which later may undergo necrosis (4) incomplete covering of the colon by peritoneum.

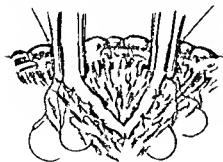


Fig 3. Resect. The segment of gut to be excised has been isolated with edge of peritoneum. The segment has been divided between the peritoneal and crush clamps. The point to be removed. The insertion of the purse string suture to close the stumps shown with the position of the ligature guillotine upon them indicated.



Fig 3. Anastomosis. The gap in the mesentery has been closed. The interrupted mattress sutures have been inserted. (In practice a hastened suture inserted.) Not particularly the sutured mattress suture controlling the real mesenteric attachment and the light anastomosis of the tumours which permits approximation of the circumference.

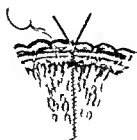


Fig 4. Anastomosis. The continuous circular suture has been inserted. Beginning at the mesenteric border on the distant side of the guillotine it has passed round and crossed the mesentery and terminated in a loose stitch over the point of emergence of the guillotine.

The method of Lissac is a form of axial anastomosis which prevents any direct opening of the lumen of the bowel during the progress of the operation. The procedure is briefly as follows:

The segment of bowel to be removed is secured at each end with pressure forceps. The attached mesentery is incised and a ligature is a well shaped

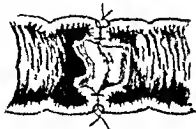


Fig 5. Set 1. Bowel completed anastomosis. The diagram shows the anastomosis completed between the two segments of bowel. The anastomosis is secured by several interrupted sutures and then anastomosed by two layers of Lembert sutures which starting at the antimesenteric border encircle the bowel. The two ligature guillotine which have been brought out of the suture line at the same point are then tightened and the pursestring is cut through the continuity of the lumen of the bowel being thus re-established.

A similar technique can be used in end-to-side anastomosis.

Experimental study in the dog has shown that the cruciate lines of the turned in cuff slough off within twenty-four hours and there is no danger of hemorrhage from the cut edges of the mucous membranes. A temporary ulcer which is present heals after about thirty days. Seventy days after the operation the nature of the mucous membrane cannot be identified microscopically and the union of the muscularis is only slightly less advanced. There is no tendency to stricture formation.

The authors used their method in two cases of tumor of the descending colon with satisfactory results. In one case the tumor was located at the splenic flexure and in the other case in the pelvic colon. In both cases resection was carried out after preliminary caecostomy.

V. C. BROWN, M.D.

Lussana S. On total incarceration of the Appendix (Italian). *Arch. Ital. Sci. Nat.* 1914, 4, 4.

Lussana calls attention to the rapid defensive action of the omentum in walling off inflammatory conditions of the abdominal organ especially the appendix. This defensive action was well illustrated in a case of appendicitis operated upon by him. The terminal appendix inserted medially and somewhat posteriorly was directed toward and covered with adherent omentum. The distal half was covered by a thick omental flap sealed with fibrin exudate which kept it adherent and was surrounded by loops of small intestine. The appendix was of normal length. The adhesion of the appendix seemed to have lost its purpose. In the internal part of the incarcerated loop there was a space partly fissural and partly cystic which was filled with pus.

In Lussana's opinion the clinical picture suggested that the inflammatory process would have remained circumscribed and would have evolved to spontaneous resolution if it had not been operated upon. Another possibility was that the encircling omentum might have strangled the appendix.

W. A. BRYAN



Fig 6. A. L. Lussana's illustration of the appendix. The diagram shows the appendix and the surrounding omentum, which has formed a thick, adherent layer around the appendix, trapping it in a loop of small intestine. The diagram shows the appendix and the surrounding omentum, which has formed a thick, adherent layer around the appendix, trapping it in a loop of small intestine.

Heimholz H H The Diagnosis of Acute Appendicitis in Children *M n sola Med* 1924 vii 187

The high mortality of acute appendicitis in childhood is due to the insidiousness of the onset of the condition and the rapidity with which the appendix ruptures. Appendicitis is rare in infancy and the diagnosis is seldom made until the peritoneum has become involved.

The history is of importance in eliminating the abdominal prodromes of infectious diseases. The history of previous attacks is also important. The symptoms almost always present are vomiting and pain. Pain which persists after vomiting is of great significance. At first it may be epigastric but later it localizes in the right lower quadrant. In only one case in the series reviewed were vomiting and pain both absent. Local tenderness increasing with pressure is the most important sign. In the differentiation from pneumonia local tenderness noted on rectal examination is of value. The temperature generally ranges from 98.6 to 102 degrees F. The leucocyte count ranges from 15,000 to 20,000. A low leucocyte count with 85 per cent of polymorphonuclear cells is very suggestive of appendicitis.

In the differentiation of appendicitis from pneumonia, the points to be emphasized are the history abdominal pain vomiting diarrhoea respiratory symptoms abdominal tenderness the findings of rectal examination and of roentgen ray examination of the chest the leucocyte count and the temperature.

Davidson C Davison M and Royer D J Adhesions About the Ascending Colon Simulating Chronic Appendicitis *S g Gynec & Obst* 1924 xxx iii 71

In certain cases of a vague abdominal condition simulating chronic appendicitis peptic ulcer colitis chronic constipation or gall tract disease. A ray observation with the barium meal has revealed definite pathognomonic disfigurement of the shadow contour of the ascending and transverse colon which produced partial or complete obstruction of the large bowel at the point of greatest involvement. Usually there was a ptosis of the transverse colon with adhesion to the ascending colon and constriction at the hepatic flexure.

The etiology is obscure. As the condition is not evident at birth it is not congenital. It is most common after middle life. Sex is not important. In all cases there is chronic constipation and the intestinal stasis causes lowered resistance of the bowel wall to bacterial migration and consequent low grade peritoneal inflammation. Chronic appendicitis is not always present and gall tract disease and duodenal and pyloric ulcer are rarely found. The most common type of adhesion is a fan shaped band spreading over the ascending colon up and onto the transverse colon. By its contraction the latter is rotated anteriorly and brought into apposition with the ascending colon thus producing angulation and partial obstruction at the hepatic flexure.

The other type seems to involve only the ascending colon. The bands are dull glistening white fibrous tissue too thick to be called membrane. They are very vascular and unlike Jackson's membrane can not be separated from the serous coat of the bowel. The symptoms include vague abdominal pain usually in the right side of the abdomen and often radiating to the back distress after eating anorexia gas eructations chronic constipation nausea and occasionally vomiting. In cases with intestinal obstruction acute abdominal crises occur. Abdominal tenderness and rigidity are usually noted above the appendix and below the gall bladder areas. The white blood count averages 10,000.

The barium meal is preferred to the clyster because the latter fails to reveal disease above the ileocecal valve.

In the surgical treatment the bands are dissected and freed but because of contraction are rarely resected. The denuded areas must be peritonized.

The postoperative care includes keeping the patient on his left side to allow the transverse colon to drop away from its former position beside the ascending colon. Magnesium sulphate is given to keep the bowel active. The resulting slight bowel distention prevents the formation of new adhesions.

PHILIP J. MURPHY, M.D.

Gray Sir H W M The Effects of Stagnation in the Ascending Colon *Canadian M J* 1924 xiv 93

The old anatomists taught that the normal cecum and ascending colon are adherent to the posterior abdominal wall and not mobile. Mobility of these parts of the intestine is due to a fault in their descent in fetal life. The author states that mobility of the cecum and ascending colon is often the primary cause of conditions for which the abdomen is opened and an appendicectomy is performed without the relief of symptoms.

Chronic stasis affects all of the tissues of the body the functions of the organs the internal and external secretions and local and general metabolism. When the cecum descends its attachments are drawn out into more or less well formed bands. A drag on these bands may cause local or referred pain the severity and persistence of which depends upon the severity and persistence of the drag. This condition may lead also to stagnation in the gall bladder causing symptoms that in some cases are indistinguishable from those of gall bladder disease and may be a prominent factor in the causation of gall stones. A downward drag on the band that crosses the duodenum is apt to cause partial obstruction producing gastric symptoms or even gastric ulcer. The right colic vessels may be so pulled upon by a loaded and dropped cecum that the superior mesenteric vessels and the neighboring sympathetic plexus are affected. As a result there may be profound reflex phenomena. Frequently there are complaints of marked though vague abdominal discomfort. Again because of the pull communicated



Morley J. A Postgraduate Lecture on Acute Obstructive Cholecystitis. *B. M. J.* 1934 455

Acute obstructive cholecystitis results from the impaction of a stone in the neck of the gall bladder or cystic duct and presents a clinical picture different from that of other manifestations of gall stones. Its pathogenesis bears a striking similarity to the pathogenesis of acute (obstructive) appendicitis but there is less tendency to gangrene and perforation because of the smaller number of bacteria, the better blood supply, and the toughness of the gall bladder wall.

Obstructive cholecystitis occurred in thirty-eight of 100 consecutive cases operated upon for gall stones. In four of these perforations had taken place. There were four deaths.

An attack of obstructive cholecystitis begins as an ordinary biliary colic but instead of passing off in from two to eight hours it persists and the pain becomes sharp and stabbing, localized to the right hypochondrium and increased by deep breathing and coughing. Muscular rigidity develops and tenderness on palpation becomes exquisite. Shoulder tip pain is relatively uncommon. Vomiting almost always occurs and may be repeated. The bowels are usually constipated. The temperature is elevated in proportion to the severity of the inflammation and the pulse is accelerated. Jaundice is usually absent. The distended gall bladder may be palpated.

In the diagnosis this condition must be differentiated from acute appendicitis, acute hemorrhagic pancreatitis, and acute infections of the right kidney. An acute attack is very apt to subside but marked rapid distention of the gall bladder with a temperature over 101 degrees F indicates danger of gangrene and perforation. The latter rarely occurs before the fourth or fifth day.

The time for operation depends on the severity of the symptoms and the general condition. Cholecystectomy is the operation of choice but great care is necessary to avoid damage to the hepatic or common duct or the cystic artery. If dense adhesions are present about the gall bladder neck, simple drainage may be the best procedure. In rare cases a large stone may ulcerate through into the duodenum and cause acute intestinal obstruction.

L. M. ZIMMERMAN, M.D.

Carron R. D., MacCauley W. G., and Camp J. D.  
Roentgenological Diagnosis of Cholecystic Disease. *Radiology* 9:4, 80.

In an effort to determine the significance of the direct roentgenological signs of disease of the gall bladder by comparison with the surgical and pathological findings, the authors studied 500 cases which were referred during a period of one year to the Section on Roentgenology of the Mayo Clinic for examination of the biliary tract.

Because of the high incidence of disease of the gall bladder, negative roentgenological findings in the stomach, duodenum, and urinary tract in cases

of discomfort in the upper part of the abdomen are very suggestive of disease of the gall bladder. This circumstance no doubt tempts the roentgenologist to make a diagnosis of disease of the gall bladder even when his evidence may be otherwise highly inconclusive. As diagnoses based on such possibilities are unscientific, only roentgenological evidence which can be substantiated by pathological changes should be considered.

In the opinion of the authors, the shadow of the gall bladder is not produced merely by thickening of the wall of the organ. In certain instances in which there was a shadow believed to be that of the gall bladder, operation disclosed that the gall bladder was thin walled and contained thin bile. In other instances no shadow was visible though the gall bladder was thickened and contained thick bile. These facts indicate that thickening of the wall is not the only factor responsible for the resulting shadow and suggest that the bile must play a considerable part in its production. As experiments have demonstrated that it is impossible to distinguish between the X-ray densities of normal and abnormal bile, the authors believe that there is no apparent reason why the normal gall bladder should not cast a shadow as often as the diseased organ. Other factors influencing the production of the shadow are the relative size of the gall bladder and the amount of its fluid contents.

Of the surgical cases with a positive roentgenological report, the roentgenologist made a correct diagnosis of disease of the gall bladder in 97 per cent. Of those in which the gall bladder was reported as negative by the roentgenologist, it was considered normal by the surgeon and was removed in only 17.4 per cent. Of the gall bladders considered roentgenologically as abnormal, 82.6 per cent were removed and the operative diagnosis was confirmed by the pathologist. Of all the surgical cases in which a lesion of the gall bladder was found at operation, the roentgenologic diagnosis was correct in 45.1 per cent. Of the cases in which stones were found at operation, a roentgenological diagnosis of gall stones had been possible in 38.4 per cent.

A pathological study of 343 gall bladders was made with regard to the severity of the disease, the length and diameter of the organ, the thickness of the wall, and the presence of stones and of the pathological entity known as strawberry gall bladder. The results being compared with the roentgenological report. An analysis of the series showed that the roentgenologist had made a positive report of disease in 51.9 per cent and a negative diagnosis in 44.6 per cent when there was evidence of mild or extreme grades of disease of the gall bladder.

Fewer than half the cases of diseased gall bladders were revealed by the roentgen ray. From the findings in the series studied, the authors draw the conclusion that an affirmative roentgenological diagnosis is highly reliable although it can be made only in a minority of the cases and that a negative report is worthless.



Drury D R McMaster F D and Rous P Observations on Some Causes of Gall Stone Formation III The Relation of the Reaction of the Bile to Experimental Cholelithiasis *J E p Med* 194 xxxi 403

There is a definite tendency for calcium carbonate to come out of solution in the normal liver bile of the dog and to be deposited on certain nuclei not infrequent in the secretion under pathological circumstances. Gall stones formed in this manner were frequently found in the intubated animals studied by the authors.

The solubility of calcium carbonate is known to be markedly affected by the reaction of the fluid in which it is contained. The normal liver bile out of which it tends to precipitate is alkaline with an average pH of 8.20 but in the gall bladder where conditions might otherwise seem especially favorable to precipitation the secretion undergoes a change toward the acid side becoming on long sojourn there strongly acid to litmus (pH 5.18 to 6.00). From bile thus altered no carbonate precipitation takes place even when it becomes greatly concentrated as in fasting animals or after obstruction of the common duct.

Reasons for the absence of carbonate stones from the normal ducts under ordinary conditions are the motility of the ducts the flushing they undergo from an intermittently quickened bile stream and the cleansing and possibly antagonistic action of the secretion elaborated by the duct mucosa. In the fasting animal the rate of bile flow is greatly cut down while the calcium concentration of the secretion undergoes a considerable increase.

There is also a change in the bile reaction a diminution in alkalinity so great that the pH often approximates that of the neutral point for litmus.

These adjustments within the organism strongly suggest that the bile reaction plays an important part in determining the occurrence of carbonate stones and that their absence from the normal gall bladder is due to the changes in the bile reaction occurring there. The changes come about through the functional activity of the bladder.

In man carbonate spherulites often serve as centers for the formation of secondary stones of carbonate and cholesterol. Cholesterol precipitation from human gall bladder bile can be induced or prevented by slightly altering the reaction of the fluid toward the alkaline and acid sides respectively.

SAMUEL KAHN M D

Désplas and Ebrard Hæmorrhagic Pancreatitis Due to Stone and Without Fat Necrosis Emergent Operation Without Recovery Secondary Cholecystectomy (Pan-faite hémorragique d'origine lithiasique sans nécrose intestinale d'urgence guérie par cholecystectomie secondaire) *Bull. mém. Soc. t. d. ch. de P.* 1941 37

The pre-operative diagnosis in this case was hæmorrhagic pancreatitis occurring in the course of cholelithiasis but at first the symptoms suggested perforated ulcer. The diagnosis was verified at op-

eration. On palpation the gall bladder was found full of calculi. There was no fat necrosis. Operation consisted in opening and draining the oedematous and hæmorrhagic areas in the pancreas. The gall bladder was removed at a second operation. The patient recovered.

In 170 cases of hæmorrhagic pancreatitis reported in the literature since 1908 the authors found ninety-three with fat necrosis and sixteen without it. Only twenty-three of the former and eleven of the latter were operated upon during the first twenty-four hours. In the ninety-three cases with fat necrosis there were fifty-four deaths and in the sixteen cases without it there were eleven deaths. Absence of fat necrosis denotes greater gravity of the case.

The authors regard hæmorrhagic pancreatitis as a complication of biliary lithiasis. In grave cases it is necessary quickly to open the pancreatic capsule and drain. The condition of the biliary organs should be verified but the treatment of lesions in the biliary tract need not be immediate.

Hæmorrhagic pancreatitis occurs less often with out fat necrosis than with it. The mortality of the former type is 73 per cent and that of the latter 61 per cent.

W. A. BAEN AN

#### MISCELLANEOUS

Finsterer H Methods of Inducing Local Anæsthesia in Abdominal Surgery and Their Results (Die Methoden der Lokalanæsthesie in der Bauchchirurgie und ihre Ergebnisse) *Berlin. Urt. & Schw. eb. g.* 1923

This work is more comprehensive than is indicated by its title. The various gastric operations are compared and conditions such as peritonitis, ileus and vicious circle are discussed.

A chapter is devoted to the effect of local anæsthesia upon the prognosis in cases of abdominal operation. Local anæsthesia is indicated when general anæsthesia is contra-indicated for example to prevent a further fall in the blood pressure in emergency operations for ileus and peritonitis. Anæsthetization of the abdominal wall and the administration of very light whiffs of a general anæsthetic appear to make deep narcosis unnecessary. This procedure is not followed by operative shock. The author regards deaths from so-called operative shock as late deaths due to anæsthesia.

In 2409 laparotomies including 693 resections of the stomach and 763 resections of the intestine there were no deaths from operative shock. Acute dilatation of the stomach is also a rare sequel of local anæsthesia. The author has observed only three cases of any considerable severity.

The question of pulmonary complications is discussed in detail. The belief that local anæsthesia has no effect upon the danger of lung complications was based upon a comparison of unlike figures and is therefore incorrect. In 460 resections for gastric or duodenal ulcer in the author's series there were no deaths from pneumonia.

For local anesthesia the author uses Braun's novocaine adrenalin usually in  $\frac{1}{2}$  per cent solution. Experiments are now being made to determine whether the duration of the anesthesia may be increased by the addition of  $\frac{1}{2}$  per cent quinine sulphate. This would be of value particularly for suture of the abdominal wall as it would permit the patient to make better efforts to clear the air passages.

In discussing the sensibility of the abdomen the author calls attention to the sharp demarcation which is sometimes noted. Following a description of abdominal wall anesthesia he discusses the conduction anesthesia of the mesentery, which he first reported in 1912 and which can be easily induced in organs with a movable mesentery, by injecting from 20 to 40 c. cm. of a  $\frac{1}{2}$  per cent solution of the anesthetic. Paravertebral anesthesia is very difficult and not without danger. It is to be considered only for unilateral resection of the large intestines, ileocecal resection and occasionally for operations upon the cecum. An instructive illustration shows how the puncture may be made in the spinal cord or the lumbar sac.

Finsterer discusses also in detail the splanchnic anesthesia of Kappis which was induced in seventy-two cases and that of Braun which was employed in 328 cases. He prefers the latter as it has never caused him any anxiety. However he used only from 50 to 70 c. cm. of a  $\frac{1}{2}$  per cent solution of the

anesthetic. Braun's parasacral anesthesia was found satisfactory for high carcinoma of the rectum. It was induced with bilateral injections of from 10 to 15 c. cm. of a  $\frac{1}{2}$  per cent solution of the anesthetic on the anterior surface of the fourth lumbar vertebra. The needle was inserted at the transverse process of the fifth lumbar vertebra and to a depth of from 1 to 2 c. cm. Lumbar and sacral anesthesia which are described briefly the author uses seldom since they are associated with great danger. The danger of sacral anesthesia is even greater than that of general anesthesia.

In other chapters of the work the author describes the special technique for inducing local anesthesia for slight, moderately severe and major operations. The chapter on anesthesia in cases of gastric ulcer contains a description of the entire clinical picture of this disease in relation to the operative treatment. The chapter on operations upon the liver and biliary passages deals with cholecystectomy, choledochotomy, operations for carcinoma of the gall bladder, cholecysto-entero anastomosis and operations for cirrhosis and carcinoma of the liver. The text is supplemented by tables and case histories. Operations upon the female genital organs and the kidneys which are performed under paravertebral anesthesia are discussed briefly. No mention is made of operations upon the bladder or prostate. There are forty-two illustrations, twelve showing methods for local anesthesia.

ALLEN KAMPP (2)

# GYNECOLOGY

## UTERUS

Moench L M The Relationship of Chronic Endocervicitis to Focal Infection with Special Reference to Chronic Arthritis *J L B & Clin Med* 1924 11 289

The author discusses the possibility of a definite relationship between chronic infection of the uterine cervix and morbidity in general and reaches the following conclusions

1 The anatomical and pathological facts reviewed point to the structural predisposition of the uterine cervix to act as chronic foci

2 Bacteriological and animal experiments indicate the special rôle played by the streptococcus with regard to pathogenicity and the relative unimportance of the more saprophytic flora

3 Evidence is presented to show the affinity of cervical streptococci for joint tissues

4 A marked percentage increase in joint localization in a series of selected cases of arthritis was in agreement with Rosenow's elective localization theory of focal infection

5 Clinical and experimental evidence offers further support of such a relationship

6 The antigenic properties of the cervical streptococci suggest low virulence but high specificity of these strains

7 Evidence is offered to suggest a parallelism between the virulence of the cervical streptococci and their biological conditions of growth

8 Experiments *in vivo* suggest bactericidal as well as bacteriostatic effects of anilin dyes on cervical organisms A modification of Kennedy's interstitial injection method is based on the selective bacteriostatic principle for the elimination of the cervical focus

Wintz H The Results of Roentgen Ray Therapy of Cancer at the Erlangen Gynecological Clinic (Di Erfahrung mit der Röntgenstrahlung bei Krebs der Eingeweide) *Strahlentherapie* 1913 3 7

In roentgen ray and radium treatment we are dealing fundamentally with the same remedy the chief difference is in the technique of application

Radium must be applied in close proximity to the area to be radiated as only limited quantities of it are available and with one application it is possible to reach a depth of only 3 cm On this account the author has been employing the roentgen ray almost exclusively for several years though there are certain cases in which its combination with radium is of value

The method of Wintz is based upon the principle of exposing the entire carcinomatous area to from

100 to 110 per cent of the skin erythema dose This dose is not to be regarded as the minimal dose nor as the curative dose but only as a destructive dose If destruction is not accomplished the fault lies in the difficulty of calculating the dosage and the inadequacy of the method of measurement Since the dose may be altered by numerous factors it is not justifiable without further investigation to place the blame for an unfavorable result on the biological reaction of the carcinoma

From his statistics the author finds that in about 30 per cent of the cases of operable portio and cervical carcinoma the result is entirely negative because of inability of the body to remove the destroyed carcinoma cells As the resistance of the body is greatly influenced by external conditions the outlook for a favorable result is twice as good in the cases of patients who are well cared for as in those of patients who are unable to obtain adequate rest and care

The author's method of irradiating portio and cervical carcinoma consists in subjecting the primary tumor to from 100 to 110 per cent of the skin erythema dose through five or six fields 6 by 8 cm in size and after an interval of seven weeks irradiating the adnexa through four or five fields on each side Irradiation in a single sitting is not advisable Since 1921 most of the irradiations have been preceded by the application of copper which causes more rapid recession of the tumor and quicker scar formation

The after treatment must include the care of injuries caused by the irradiation (unavoidable damage to the bladder and rectum which usually heals readily) and strengthening of the body by the administration of iron and arsenic and other measures

According to the statistics collected by Wintz 14 per cent of the patients subjected to irradiation were alive after six and one half years 18 per cent after five and one half years and 18 per cent after four and one half years The favorable effect of the gradual impingement in the technique is evident in the increase in the number of clinical cures Of patients treated in 1916 24 per cent were alive after two and one half years while of patients treated in 1919 34 per cent were alive after the same length of time

RUMF (G)

Winter F Postoperative Prophylactic Irradiations in Cases of Carcinoma of the Uterus (Betrachtungen über die postoperative prophylaktische Bestrahlung des Uterus) *Monatsschrift für Gynäkologie und Geburtshilfe* 1923 11 7

Winter reports the results obtained by postoperative prophylactic irradiations in cases of carcinoma at the Second Gynecologic Clinic in Munich The

cases were treated in the period from January 1 1917 to September 30 1920

Of the fifty nine patients with cervical carcinoma only three were operated upon by the Wertheim technique all of the others being subjected to total vaginal extirpation Thirty six were irradiated postoperatively and twenty three were not irradiated At the time of this report 61 per cent of those irradiated and only 39 per cent of those not irradiated were still alive In four fifths of the cases only from two to four years have elapsed since the treatment

Most of the twenty three cases of carcinoma of the body of the uterus showed no recurrences even when irradiation was not given (eight of ten cases) Of the patients not irradiated two died but the death of one was due to a condition other than carcinoma

In the cases of carcinoma of the ovary considerable improvement in the results was obtained by postoperative irradiation Of the four patients irradiated three are known to have remained cured and one cannot be traced In the 10 cases in which irradiation was not given recurrences developed

The poor results in the treatment of carcinoma of the vulva were not improved by postoperative irradiation

The author believes that the best prophylactic treatment after operation is a single irradiation of the entire area threatened MARTIN (C)

## ADNEAL AND PERIUTERINE CONDITIONS

Matthews H B The Effects of Radium Rays upon the Ovary *S f G & Ob t* 19 4 XXVIII 383

From a detailed study of the effect of radium rays upon the ovary the author draws the following conclusions

1 In certain lower vertebrates notably the rabbit the ovarian tissue can withstand without loss of fecundity larger doses of radium rays than the ovaries of the human female This may be accounted for by the so called selective action of the rays or by the fact that in the animal the ovary lies nearer the source of the rays than it does in the human female when radium is applied through the cervical canal

2 The main histopathological changes in human ovaries brought about by exposure to radium rays in sufficient dosage to produce amenorrhoea for varying periods of time e g from 800 to 1200 mgm hrs or longer include round-cell infiltration engorgement of the blood vessels extensive fibrosis in and about the blood vessels and throughout the entire organ and more or less disintegration of the follicular apparatus These changes are increased in extent proportionately with an increase in the dose administered there being finally complete destruction of all the follicles (ripe and unripe) and extreme fibrosis throughout the entire organ which in many

of the blood vessels amounts to an obliterative endarteritis

3 From the data at hand it seems reasonable to conclude that after the usual dose of radium used to control non malignant uterine bleeding pregnancy may occur and delivery may be accomplished normally If more than from 600 to 800 mgm hrs is used fertility will probably be destroyed

4 The tendency to abortion is slightly increased following the use of radium

5 The offspring of radiated women show no untoward effects and usually develop normally

6 Age is a very important factor as regards the effects of radium rays The ovaries of active healthy young animals can withstand relatively much larger non sterilizing doses of radium rays than the ovaries of older less active animals

HARRY W FINK M D

Lack V J A Case of Cyst Development in an Ovarian Graft *Proc Roy Soc Med Lond* 924 xiv Sect Obst & Gynec 33

Cystic changes in ovarian grafts appear to be rare While several surgeons have mentioned the risk of cystic degeneration as a possible objection to ovarian grafts Lack has been able to find only two cases reported in the literature one recorded by Graves of Boston in which three subsequent operations were necessary for the removal of cysts and one recorded by Blair Bell

A case seen at the London Hospital was that of an unmarried girl of 20 years who was admitted to the medical wards on October 14 1921 suffering from ascites A tentative diagnosis of tuberculous peritonitis was made After paracentesis an abdominal tumor was discovered

At operation a large amount of free fluid was evacuated and an ovarian tumor about the size of an adult head was revealed on the right side No secondary nodules were seen on the peritoneum or in the omentum A portion of apparently healthy ovarian tissue about the size of a bean was discovered in a cyst on the left side In the closure of the abdominal wound the greater part of this tissue was fixed by one stitch to the fascia behind the right rectus muscle and a much smaller piece was dropped into the wound behind the left rectus muscle The wound healed by first intention and convalescence was uneventful

On May 17 1923 the patient stated that she had remained well but had not menstruated since the operation In July there was slight bleeding for two days and twenty-eight days later a normal menstrual period lasting four or five days Fourteen days later bleeding began again and continued for seven days The amount of blood lost was slightly excessive Subsequently there were two further periods of bleeding On October 21 the patient was readmitted to the hospital complaining of menorrhagia for five weeks and slight abdominal discomfort

Examination revealed a small rather firm cystic swelling in the abdominal wall about 4 cm long by

2 cm wide This was situated 3 cm from the operation scar in the midline and about equidistant from the symphysis pubis and the umbilicus It was fixed to the muscle and not tender

A small incision made over the swelling showed that it consisted of two small cysts one about twice the size of the other The larger was filled with a brownish clear serous fluid and the smaller with a pale yellow clear fluid The mass was excised The wound healed by first intention

The graft contained two ova in primitive follicles and two follicular cysts In one of the follicular cysts there were changes suggesting a modified lutein reaction

EDWARD L CORNELL M D

Estes W L Ovarian Implantation the Preservation of Ovarian Function After Operation for Diseases of the Pelvic Viscera *Surg Gynec & Obst* 1924 xxxviii 394

In an attempt to find a method whereby bilateral salpingectomy might be done without preventing subsequent pregnancy the following operation was evolved by the author's father and used by him in 100 cases

The patient is placed in the Trendelenburg position and the upper abdomen packed off Pelvic adhesions and the tubes and ovaries are carefully and gently freed The ovaries are carefully inspected and the one most normal in appearance is chosen for

implantation The tube and ovary of the side opposite the implantation are removed first The broad ligament and the uterine artery where it emerges at the horn of the uterus are tied off The tube of the implanted side is then removed together with enough of the horn of the uterus at the tubal attachment to leave a raw area the size of the cut surface of the ovary A longitudinal slice is taken through the full diameter of the ovary about one quarter of it being removed from the surface opposite its ligament and mesentery and the cut surface of the ovary is turned over onto the denuded area of the uterine horn and sutured in place with a continuous catgut suture The round ligament is then plicated over this to peritonize it On the opposite side the stump of the broad ligament is sutured to the horn of the uterus and covered with the round ligament

Contraindications to this type of operation are an edematous uterus pyosalpinx or pelvic abscess and the cases of women with a low mentality contra indicating pregnancy

Of twenty seven women traced after this operation four (15 per cent) became pregnant nineteen (70 per cent) had regular menstruation and four had irregular bleeding Three of the twenty seven were operated upon a second time for cystic enlargement of the implanted ovary

HARRY W FINE M D

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Rowland V C The Pernicious or Hæmolytic Anæmia of Pregnancy *J Am M Ass* 1924 LXIII 372

The hæmolytic or pernicious anæmia of pregnancy is a special form of severe anæmia which resembles pernicious anæmia but when once overcome does not tend to recur. The condition should be more widely known especially among obstetricians in order that an early diagnosis may be made and preventive treatment carried out.

The anæmia comes on insidiously and may become apparent only during the later months of pregnancy or during the puerperium. It may be associated with the symptoms usually seen in toxic cases of pregnancy. Labor is apt to come on prematurely and is characteristically short, relatively painless and associated with minimal bleeding. In neglected cases stillbirths are frequent and after parturition there may be sudden collapse and death of the mother.

The treatment includes blood transfusion and the intravenous administration of sodium cycodylate to tide the patient over the crisis.

HARRY W FINE M.D.

Weldon T S The Time for Operation in Ectopic Gestation *Am J Ob & Gyn* 1924 VII 158

The author comes to the following conclusions:

1. Nothing is gained by operating while the patient is in shock.

2. If the patient does not die at the time of her initial collapse she will respond to a certain degree to treatment.

3. All women in shock should be given a trial to demonstrate what they can do by way of recovery. This is well shown by systolic pressure readings.

4. In all cases of ectopic pregnancy in which rupture has not occurred surgery is the rule.

5. When the pressure continues to fall in spite of treatment surgery is imperative.

6. When the pressure reacts to 115 mm. at the maximum operation is indicated.

7. When the pressure is permitted to run to normal limits the sealing clot may be disturbed and renewed hemorrhage and shock may occur.

8. In the moribund type of case with an initial pressure of 50 mm. or lower the rise under treatment is never back to normal limits.

9. A pressure that rises and then remains stationary calls for surgery. The time we wait while the pressure remains stationary depends upon the type of case and the experience of the operator.

10. A pressure that rises and then begins to fall calls for immediate surgery.

11. The action of the systolic pressure is a good index of the patient's condition.

12. Records to date are for the most part unreliable as the clinical data recorded are inadequate.

EDWARD L. CORNELL M.D.

Katz H Untreated Ectopic Pregnancies with Fatal Outcome (Beobachtung an unbehandelten ektopischen Schwangerschaften mit tödlichen Ausgang) *Zentralbl f Gynaek* 1923 XLVI 1567

In the records of the Institute of Medical Jurisprudence in Vienna for the period from 1890 to 1922 Katz found thirty-one cases of more or less sudden and unexplained death in which autopsy revealed interrupted ectopic pregnancy with internal hemorrhage.

All of the cases were tubal pregnancies, twenty-two in the isthmic portion, five in the ampullar portion and four in the interstitial portion. All of the twenty-two isthmic pregnancies terminated within the first or second month by rupture. Of the five ampullar pregnancies three ended in rupture in the third or fourth months and two in tubal abortion. In the interstitial pregnancies the rupture occurred once in the fourth and once in the fifth month.

In only five of the cases was pregnancy suspected. No medical aid was sought in sixteen cases and in only three of the remainder was tubal rupture considered. In sixteen cases the symptoms were noted only from six to twenty-four hours. The amount of hemorrhage varied and showed no relationship to the duration of the illness. The greatest loss of blood recorded was 3,250 c.c.m. in nine hours. In twenty-seven cases the decidua was still present.

The author reports these statistics to show that every recognized case of ectopic pregnancy should be subjected to operation.

H. W. G.

Mills L The Significance of Ocular Changes Occurring in Association with Pre-eclampsia Symptoms *Am J Ob & Gyn* 1924 V 34

In more than 90 per cent of cases of pregnancy the eyes are involved as a result of the physiological enlargement of the pituitary gland which causes contraction of the visual fields by pressure upon the optic commissure and tracts. In the more marked cases more or less retinal venous stasis arises probably from the same origin.

In occasional cases a temporary but decided loss of central as well as of temporal vision at times amounting to practical blindness has also been noted. Heretofore this has been attributed to toxæmia of pregnancy but no gross renal blood or obstetrical pathology is found. Probably such

cases represent an acute obstructive retinal stasis and edema or the direct effect of relatively excessive pressure upon the optic nerve stem or a combination of these factors.

The symptoms of headache, nausea, vomiting and epigastric and colonic distress in these cases hitherto assumed to be pre-eclamptic often occur without renal or hepatic disturbance. It seems probable that they are due to the local intracranial pressure of the hypertrophied pituitary as well as to the greatly increased pituitary function.

Ability to separate symptoms hitherto considered pre-eclamptic into those of pituitary gland origin and those arising from a genuine toxemia of pregnancy and an accurate knowledge of the relative importance of each will be obtained in large measure from systematic examinations of the visual fields and eye grounds of all pregnant women who suffer late in pregnancy from headache, nausea and vomiting and abdominal distress and renal or hepatic disturbance.

EDWARD L. CORNELL, M.D.

Thalhimer W. Insulin Treatment of the Toxicemic Vomiting of Pregnancy. *J. Am. M. A.* 1924 11: 606

To date the author has had the opportunity to use insulin in only three cases of severe toxicemic vomiting of pregnancy, but the results have been so striking and paralleled so exactly those obtained in all cases of postoperative acidosis similarly treated that they seem sufficiently important to report.

In one case of marked ketosis an insular toxicemic vomiting of pregnancy liver involvement was indicated by the presence of large am units of bile in the urine. This patient was a further test of the insulin treatment as it was discovered later that she tried not to cease vomiting as she desired to have the uterus emptied. She left the hospital feeling well and recovered to her pregnancy and has remained well since.

In Case 2 the course of the acidosis was followed with Van Slyke's method of determining the alkali reserve. Before treatment this was 35.5 corresponding to 24 acetone and 4 acetic acid in the urine, i.e. a moderately severe acidosis. The morning after one treatment with insulin and glucose the alkali reserve was found to be 49. During the day after treatment a small or moderate amount of acetone appeared in different specimens of the urine and the patient vomited once. This ketosis could have been overcome by more insulin but as the patient was retaining most of the food taken it was deemed best not to give her another treatment as the utilization of food would overcome the condition.

In Case 3 a second course of treatment was necessary twenty-four hours after the first. Ten units of U 20 insulin was used for the first treatment as U 20 insulin was not available. It is noted U 20 insulin have not seemed as efficient as U 20 or U 30. When U 20 was used in the second treatment the acidosis etc. cleared up promptly in the usual manner.

For the time being treatment with insulin should be reserved for the most severe type of toxicemic

vomiting of pregnancy. Miller cases clear up when the patient is given rest in bed, sedatives and glucose solution by rectum.

In the ketosis of pernicious vomiting of pregnancy insulin seems to act in the same way as in post-operative non-diabetic acidosis.

EDWARD L. CORNELL, M.D.

Baughman G. The Treatment of Eclampsia and Nephritis Complicating Pregnancy. *South M. J.* 1924 2: 203

A large percentage of pre-eclamptic women can be saved from coma and convulsions by careful management. With the first signs of headache, malaise, edema, blurring of vision, a rising blood pressure and the presence of albumin or casts in the urine, Baughman treats the patient for toxemia. The diet is restricted to milk and bread and cream of tartar lemonade (1 dr. of cream of tartar to the pint) and digitalis are prescribed. If the condition does not promptly improve the patient is put to bed preferably in a hospital analysis of the blood is made and at the time the blood is withdrawn for analysis 200 cc. of 20 per cent glucose solution are run into the vein. If considerable edema is noted the patient is sweated by hot packs or the electric pad. If there is still no improvement labor is induced, delivery being guarded with a sufficient quantity of morphine to make the patient comfortable.

Unless a pre-eclamptic woman has convulsions or becomes comatose her chance for life is about as good as that of the normal pregnant woman but as soon as she has convulsions or becomes comatose it decreases to one in five. In cases of convulsions the author gives 1/2 gr. of morphine at the outset of the condition and continues this drug in decreasing doses until the respirations are ten. The stomach is washed and a swift purgative such as Epsom salts is left in it. Digitalis is given until the patient is digitalized. During the convulsions a mouth gag is placed between the teeth. The colon is irrigated every eight hours first with 50 psu's and then with a 20 per cent glucose solution. Venesection followed by the injection of glucose solution has been found of value. If the condition becomes grave delivery by the quickest method and with the least shock is indicated. HARRY W. FINE, M.D.

Riehl P. An Anatomical and Clinical Study of the Margined Placenta. (*First and second*) *Am. J. Surg.* 1924 1: 8

In a very long article Riehl reports the findings of detailed anatomical and clinical study of 116 cases of margined placenta. The article is profusely illustrated. The different theories regarding the formation and types of margined placenta are discussed and analyzed.

The following conclusions are drawn:  
1. There are many types of margined placenta.  
2. The dominant factor is the fibrous ring constituted by (1) fibrin such as dense fibrin canalized

and reticulated fibrin (2) villousities more or less necrosed and (3) decidual cells in a more or less pronounced state of necrosis with hemorrhage. The last is not found in the first group of the classification here given.

3 In the first group of marginated placenta: the formation of the fibrous ring is the result of blood stagnation in the intervillous spaces at the placental periphery.

4 In the second group the fibrous ring is formed by the end of the sixth or seventh month and causes unequal development of the two placental surfaces. As a result there is variance of the two placental surfaces with the formation of the extra chorionic margin.

5 In the third group the placenta is partially inserted (rarely entirely) in one of the uterine cornua. Its tubal insertion is followed by pulling and then by separation of the superficial villousities at the side of the lobe which covers the tubal orifice. The entire process is accompanied by hemorrhage. All fibrous deposits and all necroses of the detached superficial villousities end in the alteration which constitutes the fibrous ring besides forming the extra chorionic margin.

6 A small number of marginated placenta are due to the persistence of a small tag of reflected marginal decidua which is thick and resistant and prevents the normal placing of the latter to the true decidua.

7 Marginated placenta is most frequently found in primiparae and secundiparae.

8 Marginated placenta may be the cause of hemorrhages during gestation. These hemorrhages accompanied at times by cramps in the lower abdomen may lead to separation of the placenta. In the majority of instances the separation will be only partial but in rare instances it may be total and followed by premature delivery. Accordingly there is a relation of cause and effect between marginated placenta and premature separation of a normally inserted placenta.

9 Marginated placenta has no influence on the normal development of the fetus.

SALVATORE DI PALMA M.D.

Cleaz Two Cases of Placenta Prævia with Hæmorrhage. Total Detachment of the Placenta Occurring Spontaneously in One Case and Effected Manually in the Other (Deux cas de placenta prævia avec hémorrhagie spontanée et l'autre avec hémorrhagie provoquée). *Bull. Soc. Obst. Gyn. Paris* 1903, 33, 333.

In the case in which hæmorrhage occurred spontaneously a completely separated placenta was found in the vagina and delivery of the fetus was effected without further accident.

The other case was that of a woman who was first seen after five days of bleeding and in a most critical state. A central placenta prævia was found. Following separation of the placenta through the

slightly dilated cervix the hæmorrhage ceased. A bag was then introduced and the fetus delivered. Convalescence was uneventful except for the reaction to an injection of antistreptococcus serum.

ALBERT F. DE GROOT M.D.

Gaenssle H. The Treatment of Placenta Prævia (Ueber Behandlung der Placenta prævia). *Arch. f. Gynaek.* 1903, 3, 120.

Gaenssle reports 186 cases of placenta prævia from the Tuebingen clinic. Under the direction of Sellheim and Mayer delivery was effected by the vaginal route more than half and by incision of the uterus in the others. Of the women treated vaginally fifty three were delivered by combined version, five died two from hæmorrhage and three from sepsis. There were forty two stillbirths, twenty four of the infants were viable. Dilatation of the cervix in fifteen cases resulted in the death of one mother from sepsis and of eight infants, five of whom were viable. Internal version was done eleven times, two mothers died from hæmorrhage and two infants, one of whom was viable, were born dead. In eleven cases in which the amniotic sac was ruptured there were no maternal deaths but two infants were born dead, one of the infants was viable. In two cases of perforation there were no maternal deaths. In one case of vaginal section the mother and child both survived. The death of one mother was unexpected. One mother died from embolism four from hæmorrhage and two from infection.

Except in one case of hæmorrhage from laceration the defective hæmostatic power of the lower segment of the uterus was responsible for the fatal hæmorrhage. In thirty cases the placenta came away spontaneously, in forty four it was delivered by pressure. In ten cases of the first group and twenty five of the second tamponade was done. In nine cases manual removal of the placenta was necessary. The fact that the great majority of the women were multiparae may have accounted for the frequent necessity for tamponade. Fever occurred in only ten of the fifty four cases treated by post partum tamponade.

Because of the technical difficulties of dilatation of the cervix and combined version the practitioner should send all cases of placenta prævia to the hospital if possible.

Differing from Hirschmann the Tuebingen clinic ascribes great importance to atony of the lower segment of the uterus. The reduced extensibility of this segment which increases the danger of laceration warrants following the example of Kroenig and Sellheim and performing cesarean section under certain conditions. When the placenta is adherent the cervico abdominal incision usually makes hæmorrhage possible but in some cases a fatal hæmorrhage cannot be prevented. A disadvantage of cesarean section is that it is contra indicated when infection is present.

In thirty-eight cases in which Sellheim's extra peritoneal method was used there were three mater-



nal and two infant deaths. In fifty three cases in which the intrauterine method was employed there were three maternal and three infant deaths.

Gaenssle draws the following conclusions with regard to treatment:

When there is positive infection uterine section should not be considered but when infection not manifested in cases in which external examination or tamponade has been done it is indicated. This statement holds for all cases in which the child is viable with the sole exception of those with slight hemorrhage, good pains and a child in the longitudinal position. When rupture of the sac may be done. In infected cases and those in which the child is not viable the vaginal route is to be considered unless the patient is a primipara with a closed cervical canal and severe hemorrhage. When the child is dead the choice of treatment depends upon the severity of the hemorrhage. (NACA 1 (G))

**Dietrich. The Findings from Collected Statistics on the Treatment of Febrile Abortions (Dietrich). I. Summary of the Results.**  
 (Lancet 1915, 1, 1424)

The author reviewed the collected statistics from twenty clinics on 10,000 abortions. In the cases of patients admitted to the hospital with a temperature of 38 degrees C the mortality was 4.5 per cent in those given active treatment and 4 per cent in those given expectant treatment followed by active treatment after fever had been absent for from three to eight days and 4 per cent in those given entirely conservative treatment.

In a group of clinics giving conservative and active treatment the mortality was 4.8 per cent and in a group giving expectant and conservative treatment it was 3 per cent.

Another interesting finding was the difference between purely digital evacuation and digital treatment with the use of the curette and curettage alone. When the curette was used alone the mortality was 3.4 per cent whereas digital treatment was combined with curettage it was 4.4 per cent and when purely digital evacuation of the uterus was done it was 5.9 per cent.

When the cervical canal was closed the treatment was associated with a mortality of 5.3 per cent and when the cervix was patent the mortality was 2.8 per cent. Therefore active treatment should be avoided especially when the cervical canal is closed. (Dietrich (G))

**Hillis. D. S. F. Experience with 1,000 Cases of Abortion.**  
 (S. G. C. 1915, 1, 183)

On admission to the hospital the cases reviewed were alternately assigned to one of two general groups: a group to be given active treatment and a group for conservative treatment.

Patients with threatened abortion were treated with rest, sedatives and the application of ice bags to the lower abdomen.

In cases of inevitable abortion with a normal temperature which were assigned to the group given active treatment, curettage was done on the fifth day after admission if there was any reason for so doing and if the temperature remained normal. The reason for the five day interval was that all the patients were considered potentially septic since there was no way of knowing whether or not they had had fever previous to their admission. The five day period of delay was based also on the following observations:

In 100 of 200 cases of septic abortion observed in the period from 1911 to 1916 the uterus was emptied artificially during the febrile period and as soon as convenient after the patient's admission to the hospital. In the other 100 cases there was no local treatment. In the conservatively treated cases the fever subsided more quickly, the patient was discharged from the hospital sooner, there were fewer complications and the mortality rate was lower.

In the period from October 1, 1915 to April 1, 1916 a three-day period was tried. An alarming post-operative rise in the temperature occurred in not a few cases and the stay in the hospital was prolonged.

In the conservatively treated cases of inevitable abortion which are reviewed in this article curettage was done only when the bleeding threatened life or the bloody discharge persisted for more than ten days. No patient with a temperature of 100 degrees F or above was curetted unless hemorrhage threatened life. In similar cases given active treatment curettage was done after the temperature had returned normal and had remained normal for five days. If the hemorrhage was sufficiently severe to endanger life the uterus was emptied regardless of the temperature and in such a manner as to cause the least possible traumatism to the uterus and surrounding tissues. When the uterus was emptied in the presence of fever the use of the curette was avoided if possible. Ovarian forceps were used to remove the placental fragment which were often found protruding through the slightly dilated cervix. In cases with dangerous hemorrhage it is rare that the cervix is not sufficiently dilated to admit the ovarian forceps. Curettage in afebrile cases was done with the finger ovum forceps or curettage depending upon the cervical dilatation.

Rectal examination was done as a routine in all cases.

The conclusions drawn from a study of 1,000 cases of abortion are the following:

1. Conservative treatment of abortion in febrile cases gives better results than active therapy.
2. The temperature of patients who have a five day afebrile period has a greater tendency to remain normal after curettage than that of patients operated upon before the end of this period.
3. Patients who have remained afebrile for five days have a greater tendency to maintain a normal temperature than those who are subjected to curettage before the end of this rest period.

4 In approximately 62 per cent of the cases evacuation of the uterus is necessary because of alarming hemorrhage.

5 A plan of procedure which embodies a conservative rest period of five days of normal temperature in febrile and afebrile cases seems to be a rational method for the treatment of abortion as it results in a decided decrease in the mortality.

C. H. DART, M.D.

## LABOR AND ITS COMPLICATIONS

11555 V The Fetal Indications for the Termination of Labor (Die foetal Indikationen für Cäsarearschnitt) H. em. Kl. H. h. s. k. 93 v. 44 498

The only indications for the termination of labor which were recognized by the older obstetricians were indications on the part of the mother and in the period antedating an asepsis; these were limited by the danger of infection. Termination of labor based on indications on the part of the child became possible only after the use of methods for asepsis and asepsis and recognition of the child's heart sounds. While on the one hand because of the decrease in the birth rate in all nations, greater value is attached to the life of the child since the great war, there, on the other hand, evidence of a disregard of the child's life in the constantly increasing number of miscarriages.

An extraordinary phenomenon of the last four years is the increase in the number of older primiparae. Apparently this is due to the shifting of the classes in the social world.

According to the statistics of the Vienna Gynecological Clinic for the last thirteen years 3.6 per cent of all children of normal size and weight died at birth or within eight days after birth. The great majority of the infants born dead (88 per cent) died during labor.

The most dependable sign of the condition of the child is the fetal heart beat. In from 67 to 87 per cent of cases this slows down during the second stage of labor. During the pains the circulation of the blood is checked and as a result there is a temporary arrest of the exchange of gases in the placenta with the accumulation of an excess amount of carbon dioxide in the fetal blood. It is this which is responsible for the slowing of the fetal heart.

While the membranes are still intact there are many factors which act compensatorily but in the second stage of labor the conditions for the child are very unfavorable. The transition from normal to pathological is rapid. Exact knowledge of the heart sounds is necessary to the end of delivery and will obviate many complications. Slowing of the heart beat to below 100 and its increase to above 180 are of great clinical importance. The pulse of the fetus and fall in frequency have not been fully determined. An irregular slow heart beat is very serious. The importance of variation in successive heart beats is increased by the passage of the meconium.

Sudden death of the infant without previous signs may occur as the result of interference with the circulation due to compression of the umbilical cord. When the life of the child is endangered the birth should be brought to an end only after all necessary preparations have been made for the more difficult the requisite operation the less favorable becomes the outlook.

Of 2148 forceps deliveries in the clinic, 1 per cent were carried out on indications on the part of the child alone and 31 per cent on indications on the part of both the mother and the child. Ninety per cent of all endangered children were delivered alive in normal occipital presentations by means of forceps and survived. The high infant mortality in cases of facial and frontal presentations is due chiefly to the pelvic contraction which caused the abnormal presentation. Assistance to pelvic presentations is indicated on the part of the child in the cases of primiparae; the child would otherwise be lost in nearly every instance.

The infant mortality in uncomplicated pelvic presentation is 9 per cent in the cases of primiparae; it is 10 per cent. In the cases of old primiparae the drawing down of the foot at the right times appears to be of considerable advantage. In transverse presentation there may be indications for intervention without version the full term child is certain to die. There may be indications for intervention also in uncomplicated transverse presentation; the infant mortality is 25 per cent.

In 352 classical cesarean sections the maternal mortality was 4.5 per cent and the infant mortality 4 per cent. As free from danger as the cesarean section appears it has a morbidity of 10 per cent. As the extraperitoneal cesarean section is very difficult the cervical operation is the procedure of choice. Cesarean section should be done only in clean cases. In placenta previa cesarean section has caused little improvement in either the infant or the maternal mortality. Cesarean section should be chosen only for women who come to the clinic at the time of the first hemorrhage and with the requisite preliminary conditions of cleanliness and a living child.

Entanglement of the cord is an indication for intervention for the sake of both the mother and the child.

The chief indication for the termination of labor on the part of the child is contracted pelvis of the mother. In such cases the infant mortality ranges from 54 to 182 per cent. Contraction of the first degree means little to the child but contraction of the fourth degree is an indication for cesarean section. In cases of moderately contracted pelvis about 50 per cent of children are born alive. It is in cases of contracted pelvis of the second degree (conjugata vera 7.5 to 9) that the indications are most frequently a matter of doubt.

On the whole from the standpoint of the child as well as of the mother a strictly conservative conduct of childbirth is generally correct if the life of the mother is not to be needlessly endangered.



To keep the patient from being discouraged by apparent lack of results during the waiting period it is wise to give her a placebo such as a mild counter irritant to be applied locally. The author recommends 3 percent iodine ointment.

During the period of palliative treatment the patient cannot sit comfortably upon any type of chair but can be given relief by the use of an air cushion.

Operation should never be done for painful coccyx unless injury and separation of the fragments can be clearly demonstrated. If an uninjured but painful coccyx is removed the pain will not be relieved.

Removal of the coccyx is spoken of as a minor operation but the difficulties are such that it should be included among the major operations. However proper technique is used the risk to life is negligible.

The indication for the operation is purely symptomatic and elective but in properly chosen cases there is no operation in gynecology with results more gratifying. EDWARD L. CORVELL, M.D.

## PUERPERUM AND ITS COMPLICATIONS

Solt T. Foreign Protein Therapy in Puerperal Septicæmia (L. ter pater oter p. a. elle form seit che puerperu) R. idg. c. 19. 4. 189.

The author reports 163 cases of puerperal septicæmia treated with foreign protein consisting in the main of whole cow's milk and an Italian preparation of casein called "aseal calico." As a rule no other therapeutic measures were employed except occasionally the use of dilute local disinfectants and the administration of cardiac stimulants as required. The reactions were practically all slight and none was alarming. Abscesses at the site of injection developed in only five cases.

A first group of forty cases in which the conditions before hospitalization suggested danger of infection were treated prophylactically. In six the temperature dropped by crisis within twenty-four hours after the first injections but the author believes that probably these were of the type that after developing a fever during labor promptly become afebrile after delivery when left entirely alone. With regard to thirty-three cases Solt concludes that the treatment greatly modified the course of the sepsis that developed. The term "sepsis" was not influenced by the foreign protein.

In the second group were thirty-two cases of sepsis well localized at the vulva, vagina or portio. The injections were given every second day and the maximum number was four. Local measures were also used. The duration of the sepsis was from four to ten days; in eight cases the second injection was followed by a crisis. All of the patients in this group progressed well without extension of the septic process.

In the third group were cases in which the sepsis was clinically localized in the uterus. On the basis

of the clinical and laboratory findings Solt subdivides them into cases of sapræmia and cases of septic endometritis.

There were sixteen cases of sapræmia. Three received injections every day, five received them every second day and eight received them every third day. In seven cases the fever disappeared by crisis or by rapid lysis; in the others the temperature came down slowly in from ten to twenty days. No complications developed.

There were eighteen cases of septic endometritis. Blood cultures were negative. The fever came down by crisis in six cases after the second or third injection; in the others it came down by lysis in from twelve to nineteen days. In a single case after three injections of whole milk there was a turn for the worse; further injections did not influence the course of the disease and death resulted on the twenty-fifth day.

In a group of five cases of puerperal parametritis foreign protein therapy gave excellent results.

The same treatment was given also in fourteen cases of mammary lymphangitis and mastitis. While admitting that these cases usually progress well under local treatment the author believes that resolution was hastened by the protein injections which were employed with or without additional local measures.

In the last group there were nine cases of septicæmia and three of pyæmia. In six cases of septicæmia and two of pyæmia recovery resulted; the four others were fatal. All of the patients in this group developed marked general reactions after each injection. In one case of pyæmia the treatment was begun on the seventh day of the disease; a crisis occurred after the third daily injection. It is interesting to note that ten days before the crisis an abscess developed at one of the sites of injection.

SAL AZORE DI PALMA, M.D.

## NEWBORN

Saenger. The Origin of Intracranial Hemorrhages in the Newborn (Ueber die Entstehung der intrakraniellen Blutergüsse beim Neugeborenen) Arch. f. Gyn. 1913, 3, 34.

The vein of Calen, which represents the collecting point for the veins of the cerebral peduncle and other cerebral and cerebellar veins, undergoes a sudden transition into the barely distensible tube of the straight sinus. During congestion its position and free distention make it a middle point of tension, especially as it represents to a certain extent a narrow stem in the stream bed.

The very minute hemorrhages often occurring in the vascular sheaths and the capillary ruptures in the region of the terminal veins may be explained in this way. As a result of the transmission of the congestive tension to the vena cava and tentorium there is a marked tension in the tentorium from within. The most frequent finding are hæmatomata in the region of the straight sinus, the expression of

excessive congestion with slight tearing of the dura. If the tension of the falx is increased still more the tentorium ruptures.

Asphyxia and cranial trauma are usually associated in the causation of intracranial hemorrhage. A phylxia alone cannot cause tearing of the vessels and without asphyxia trauma can have this effect only if it is very severe. Hemorrhage was found in seventy three of 100 autopsies and in forty six cases was severe. In forty three of these forty six cases the tentorium was ruptured. HANSEN (C)

Williamson A C. Icterus Neonatorum and Its Relation to the Maternal Blood Stream. *Annals of the New York Academy of Medicine* 1934 1: 72

Icterus neonatorum may be either pathological or physiological. If pathological there is usually a lesion demonstrable in or about the liver. The jaundice appears at birth and becomes more intense until death.

The numerous theories as to the cause of the physiological type of icterus may be divided into two main groups: anatomical and physiological.

The anatomical theory that icterus is due to the transference of bile pigment from the meconium of the intestines to the blood stream by way of the patent ductus venosus is not tenable since the jaundice may occur even though meconium is passed promptly and spectrometric examination of the blood of the cord does not show bilirubin which is present in large amounts in the meconium.

In the author's opinion the explanation of icterus neonatorum is to be found in a combination of fetal blood destruction and the action of the fetal liver. In experiments he found that the fetus excreted little or no iron by way of the meconium or amniotic fluid and that there is a direct relationship between the amount of iron present in the dried placenta and the incidence of icterus.

At birth the infant still takes up the function of storing the iron. With the destruction of red blood cells the amount of bilirubin becomes greater than can be readily handled and jaundice results.

In a series of tests of the blood of women between the fifth month of pregnancy and the onset of labor it was shown that there is no relationship between the bile pigment content of the maternal blood and icterus. The discovery of traces of split products of bilirubin in the placenta seems to indicate that the placenta splits the bilirubin of the fetal blood stream and stores the iron.

I EDWARD B. KOW, M.D.

### MISCELLANEOUS

Appleate J C. Rational Obstetrics from the Teaching Viewpoint. *Am J Obst & Gynec* 94: 181

While the term rational rather implies that some methods are irrational the author states that this article is not a criticism of any method or methods that have proved to be for the best interests

of the mother and child in decreasing mortality and morbidity or in the alleviation of suffering during childbirth.

The methods selected for discussion regarding which opinions differ greatly are (1) the injudicious use of pituitrin, (2) inconsistent theories regarding diaphoresis in eclampsia, (3) the shortening of the second stage of labor by forceps with or without perineotomy and (4) the shortening of labor by podalic version. It is also an appeal from the teaching viewpoint for safeguards for women during pregnancy and a discussion of new applications of old methods used during labor. The danger of a new method lies not in its originator but with the fearless imitator, the less competent or the enthusiastic beginner. Efficiency can be attained only in the school of practice by devotion to work along special lines or postgraduate work.

In the clinics and teaching at Temple University, Philadelphia, no routine is permitted except in minor affairs such as diet, etc. Every case is given individual study and management.

The physical examination includes the determination of the probable manner of delivery on the basis of the pelvic dimensions and the size, presentation and position of the fetus.

As with elective cesarean section cases with definite indications for version are determined in advance of labor while emergency section forceps delivery, version and episiotomy are decided upon during labor.

The author gives his students the benefit of the teachings of other clinicians. His ideas may or may not differ from his own and explains their reasons for so doing. Applegate believes that labor should be made as short as it can be made consistently with the limits of safety and as nearly painless as possible with mild narcotization preferably with minute doses of morphine (gr. 1/4) and scopolamine (gr. 1/100) during the first stage and chloroform or ether during the second stage. Chloroform is the anesthetic of choice in normal cases and in toxic cases with kidney insufficiency while ether is preferable in operative cases and toxic cases with pronounced hyperpnea. When ether and chloroform are contraindicated, spinal anesthesia is employed.

FOWLER I. CORNELL, M.D.

Moher G C. Maternal Morbidity and Mortality in the United States. *Am J Obst & Gynec* 94: 194

Maternal morbidity and mortality have not been reduced in the United States in the last twenty years according to the census reports. 16,000 women die in labor annually. In the loss of mothers the United States stands fourteenth among the so-called civilized nations, only Spain and Belgium having a higher death rate. Puerperal septicemia and eclampsia are the causes of more than one half of the deaths.

The questionnaire of the Committee on Maternal Welfare of the American Association of Obstet

cians and Gynecologists which was sent to every section of the country contained a request for the views of the correspondents regarding the causes of maternal morbidity and mortality and for suggestions as to remedies for their improvement.

The inevitable conclusion to be drawn from these expressions of opinion which typify the beliefs of a large number of the thoughtful and progressive leaders of the profession may be summarized by the statement that much of the responsibility for the untoward results of childbirth rests upon the members of the medical profession.

The rapid decrease in the number of midwives in practice the more drastic supervision of them by Departments of Health in the regions where they are still popular or indispensable because of a lack of a sufficient number of physicians and the realization that their work among the part of the population which they serve shows no higher percentage of poor results than the general average for the community eliminate the midwife as a factor to be reckoned with in the solution of the question of the continued high rate of maternal mortality.

In the towns and rural districts and very largely in the cities the parturient woman is cared for by the family physician because of tradition, sentiment, self interest or convenience and the average results of his work will represent the basis of statistics.

This work will continue to be conducted in the home. The great majority of women who are serving to perpetuate the best elements of the human race belong to the class of intelligent, self-respecting families who are dependent on salaries or weekly wages.

The disproportionately small amount of space allotted to such cases in the wards of hospitals, the high price of the rooms and the general coincident expense makes any but charity hospital service prohibitive to this class of women. Special nurses are equally prohibitive. Obviously home confinements involve much greater risk than confinements in the hospital.

The causes operating to lower the standard of the work of the general practitioner are insufficient medical school training, lack of hospital post-graduate training in the diagnosis of abnormal positions, lack of appreciation of the fact that the process of labor is not surgical, and failure to depend on the obstetrical specialist for diagnostic counsel rather than the young surgeon whose obstetrical experience and preparation may be very limited.

Obstetrics should be made a specialty of the same rank as surgery. As many hours of the college curriculum should be given to the drilling of the medical student in the principles of the one as the other. In a larger degree the student needs a familiar knowledge of the art of obstetrics because regardless of his training he will on entering practice be called upon to attend women in labor long before he will be called upon to perform operative surgery.

If every man who undertakes the care of a maternity case could be compelled to take a short post-graduate course every five years and could be induced occasionally to attend one of the clinics now being held annually in many of the large centers and in the meantime to read the standard medical journals, the result would be quickly appreciable in the statistics of maternal morbidity and mortality.

EDWARD L. CORNELL, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Judd E S and Scholl A J The Surgery of Renal Tuberculosis *Ann Surg* 1924 **112**: 395

Eight hundred and seventy four cases of renal tuberculosis treated surgically are reported from the Mayo Clinic. The kidney was removed in 863 cases exploration alone was done in nine. Complete post operative data were obtainable on 611 cases.

The usual procedure was a simple extraperitoneal lumbar nephrectomy. Subcapsular nephrectomy was performed in thirty five cases. In most of these the kidney was either extensively destroyed or had been operated upon previously.

Occasionally perinephritic infection occurs. In eight cases a perinephritic abscess was drained previous to nephrectomy. One patient died shortly after the second operation. In a second series of eight cases in which the perinephritic abscess was drained and the kidney was removed at the same operation there were two operative deaths.

In eighteen cases of bilateral infection the extensively diseased kidney was removed. Four patients died from anuria immediately after the operation and ten died during the next eighteen months.

Three hundred and fifty eight (58.6 per cent) of the 611 patients regarding whom complete post operative data were obtainable are cured. The average length of time since the operation is four years. One hundred and ninety-one (31.2 per cent) are dead. Sixty-two (10.1 per cent) still have evidence of tuberculosis of the genito-urinary tract.

Twenty-three of the 101 patients who died following nephrectomy for unilateral tuberculosis died during the first month after operation. This number represented 2.7 per cent of 843 nephrectomies. Five patients died of uræmia due to non tuberculous infection of the opposite kidney or chronic nephritis. There were five deaths from peritonitis in every instance the peritoneum was adherent to the kidney and was opened during the course of the operation. In three cases a pulmonary complication—pneumonia, empyema and pulmonary embolism respectively—caused death. One patient died from general septicæmia and one from paralytic ileus.

Forty-two (25.6 per cent) of 163 subsequent deaths occurred in the first year, eighty-three (50.6 per cent) between the second and fifth and twenty-one (12.9 per cent) between the sixth and tenth. Thirty-one patients died from infection of the remaining kidney in fifteen this was tuberculous. There were five late deaths due to megacystis. Twenty-one patients died from general urinary tuberculosis and twelve from pulmonary tuberculosis. Three died from tuberculous peritonitis. The remainder died from causes other than tuberculosis.

Wheeler Sir W I De C: Some Renal Tumors *Surg & Obst* 1924 **1**: viii 743

CASE 1 This was a case of adenomiosarcoma (embryoma) found in a child 8 months of age. After the first few months there was a gradual loss of weight with enlargement of the abdomen. The only finding was a large abdominal tumor on the left side which extended beyond the midline and became lost under the ribs above and in the iliac fossa below. Otherwise the child appeared healthy and well.

In infants a growth of this type is intrarenal and no urine is voided on the affected side. The renal substance forms a pseudo-capsule. If the child is otherwise healthy and strong the condition of the opposite kidney need cause no anxiety. Cystoscopy and pyelography are usually dispendable.

The diagnosis of the rapidly growing renal tumors of infancy is easy. Both kidneys may be affected. There may be recurrent vomiting, persistent constipation, enlargement of the superficial abdominal veins from pressure and a rapid loss of weight but the urine remains normal. Removal by the transperitoneal route is not difficult but requires a very long incision. The prognosis is poor. Recurrences develop in 80 per cent of cases within a year. A nodular tumor suggests sarcomatous changes.

CASE 2 The patient was a 36-year-old woman with a squamous cell carcinoma. The history, urinalysis, cystoscopy and roentgenography indicated the presence of multiple renal calculi and pus. Nephrectomy was done. Sections of the kidney revealed calcareous pyonephrosis and a squamous cell carcinoma among the atrophic and fibrosed glomeruli and tubules. The pelvis showed clusters of plasma cells.

Squamous cell carcinoma in the region of the pelvis is rare. In the great majority of cases it occurs in the presence of calculi as the result of irritation. The literature indicates that the transition from one epithelium to the other is due directly to the presence of infection and stones.

CASE 3 The patient was a man 57 years of age in whom an angioma developed suddenly with severe hæmaturia. Cystoscopy was impossible and roentgenography and urinalysis were negative for pus and bacteria. Palpation of the left renal region resulted almost immediately in the passage of a large quantity of blood. Nephrectomy was done. The angioma was found occupying the third upper calyx. It was not visible when the organ was *in situ* although there was free bleeding.

This condition is discoverable only after nephrectomy. The author suggests that it may account for the so-called essential hæmaturia.

LOUIS NEUWELT M D

Scholl A J Papillary Tumors of the Renal Pelvis  
Surg Gynec & Obst 1924 180

Tumors of the renal pelvis are usually of epithelial origin and the majority are papillary in type. In the early stages they are small often multiple flat or thickly pedunculated and confined to the renal pelvis. They spread rapidly and extensively involving the calices and sometimes the ureteral outlet. Obstruction of the ureteral outlet may cause an extensive pres ure atrophy of the renal cortex. In the late stages the kidney becomes a distended sacculated often infested with mass with complete loss of function. The renal pelvis does not offer a free space for growth like that of the urinary bladder the pelvis is rapidly filled and the papillomatous masses become matted together under tension so that they bulge from the pelvis when the kidney is opened. The ureter is frequently involved in transplants which are usually found in the normal ureteral constrictions. The individual papillomatous fronds are shorter and broader than similar growths in the bladder there is a more extensive fusion of adjacent fronds and atypical cell masses are more common.

In the bladder small papillomatous transplants may be found protruding from or surrounding the ureteral orifice. At times multiple small transplants are scattered extensively over the mucosa of the bladder. Histologically the majority of tumors of the renal pelvis as well as the transplants in the ureter and bladder are malignant. Clinically the numerous extensions and the local recurrences make all of these tumors malignant. Because of the frequency with which the ureter is involved and the repeated recurrences after nephrectomy a complete nephro-ureterectomy is essential for a complete success.

Eight papillary tumors of the renal pelvis are reported. All were histologically malignant. Three patients died from five to nine months after the operation. One of these had a transplant to the ureter and another a large secondary growth in the bladder. A fourth patient died from uremia four years after nephrectomy. Four patients are still alive two are free from recurrence two and one half years and four months respectively after the removal of the diseased kidney and ureter and two have had repeated transplants to the bladder requiring persistent treatment but at the present time are well ten years and three years respectively after the first operation.

Boerninghaus H The Physiology of the Ureters  
(Bull. J. Phy. 1924 de H. 11) Z. f. Ch. 93 x1 7

The urine is passed through the ureters by means of peristalsis. The sympathetic nerve has a stimulating effect upon the movements. In the dog the ureter with the abdominal cavity closed makes the same repitatory excursions as the kidneys and the peristalsis produces lateral curvatures and shortenings in the ureter. The shortening occurring during

peristalsis is followed immediately by a ring of contraction of the circular fiber layer. The rate of advancement approximates 2 to 3 cm a second. By filling the kidney pelvis with a shadow producing substance (sodium bromide) with a dull cannula (in dogs) and viewing the result fluoroscopically it can be seen that the ureter forces the fluid into the bladder in the form of columns about 2 cm long which are separated by sections of empty ureter.

With average filling the pelvis of the kidney always empties itself entirely. The time of passage of a column of fluid from the pelvis of the kidney to the bladder in a dog's ureter 14 cm long was from three to five seconds. The frequency of the ureteral movement is dependent upon the amount of urine. Filling of the bladder has no effect. The experiments yielded no evidence of a uretero-ureteral reflex (that is an influence on the function of one ureter exerted by stimulation of the ureter of the opposite side). Retroperistalsis in a ureter was not observed. Return flow of the urine from the bladder was not noted in cases in which the ureteral ostia were normal. On the contrary Boerninghaus has observed cystoscopically in man that during micturition the mouths of the ureters remain closed. He attributes this to the active contraction of the bladder musculature and passive closure of the valve at the lower end of the ureter caused by the increased intravesicular pressure.

Heller (Z)

Day R V Ectopic Opening of the Ureter in the Male with the Report of a Case J Urol 1924 39

Eighty five cases of ectopic openings of the ureter have been reported fifty one in females and thirty four in males. Thirty two of the latter were found at autopsy and two at operation. Over half of those in the female were diagnosed clinically.

In the very interesting case reported by Day the left ureteral opening was found in the posterior urethra. A diagnosis of pus kidney was made and a nephro-ureterectomy was performed. Except for the formation of a small sac at the vesical end of the ureter which was later dissected out recovery was uneventful.

C D PICKRELL M D

Blond I B The Treatment of Accidental Occlusion of the Ureter Ill. J. C. M. J. 1924 xxvii 34

The author discusses the different phases of ureteral injuries in surgical operations the various sequelae of such injuries and the indications and methods of treatment.

Ureteral injury is an accident of great importance. It may occur during the performance of pelvic and kidney surgery and is most frequent in abdominal and vaginal hysterectomy and the removal of intransigent tumors.

The most common forms of ureteral injury are ligation incision excision and necrosis following manipulation or cutting off of the blood supply.





the prostate. Lowsley believes that because of the intimate association of the two organs the prostate is practically always infected.

The diagnosis of seminal vesiculitis is based on the history and the physical and laboratory findings.

In the cases observed by the authors the common symptoms were a watery urethral discharge recurrent epididymitis pain about the rectum and perineum impotency sexual weakness with premature ejaculation backache arthritis dysuria and mental depression.

The authors emphasize the importance of a complete physical examination because there may be other foci of infection which should be removed. They advise obtaining the specimen from the seminal vesicles for bacteriological examination through a sterile endoscope.

In discussing the non surgical treatment Belfield's method and its modification by L. Pinasse and others are mentioned. The authors treat chronic seminal vesiculitis by injecting 10 per cent argyrol through the ejaculatory ducts.

At the New York Hospital Delfzell and Lowsley have found it necessary to operate in only nine cases of seminal vesiculitis in the last two years. This is a small number when one considers the fact that from forty to fifty gonorrheal or post gonorrheal cases are treated daily. The authors recommend palliative treatment before radical measures.

Their conclusions are as follows:

1. All cases of seminal vesiculitis except those with abscess formation should have the benefit of palliative treatment before being subjected to operative procedures.

2. The seminal vesicles may be injected with antiseptic through the ejaculatory ducts.

3. This procedure improves the drainage of the seminal vesicle by dilating the ejaculatory duct and affords an easy method of medication and for seminal vesiculography.

4. Seminal vesiculography is useful in diagnosing chronic abscess formation of the seminal vesicles stricture of the vasa deferentia or ejaculatory ducts and other pathologic or anomalous conditions.

A number of roentgenograms and photographs illustrate the article.

Sitra begins his paper with a discussion of the anatomy and physiology of the seminal vesicles. He describes the gonorrheal and non gonorrheal types of infection with their course and discusses the non surgical surgical and operative treatment. The article is illustrated with drawings and roentgenograms showing the anatomy of the seminal vesicles bladder prostate ureter, etc.

In Shea's opinion the fact that lymphatics of the seminal vesicles empty into the glands along the common iliac artery accounts for the frequency with which the joints of the legs are involved secondarily in cases of seminal vesicle infection.

Frequently Shea has found the fluid expressed from the vesicles free from bacteria but later discovered bacteria in the wall. The products of infection

pass through into the blood stream in the form of toxins etc. are transmitted to a joint. In some cases the infected seminal vesicles are not palpable. In others the expressed fluid may contain no pus.

Shea credits Fuller with being the first to call attention to the seminal vesicle as a focus of infection particularly in arthritis. Fuller also advocated surgical removal of these organs.

Infection of the seminal vesicles may be secondary to a focus in the teeth or tonsils. In such cases the vesicles may supply toxins to the synovial membranes after the original focus has been removed.

In gonorrheal seminal vesiculitis there is marked chronicity with periodic expulsion of septic material into the general circulation. This infection is usually a continuation through the ejaculatory ducts of an anterior urethritis.

Non gonorrheal infection may gain entrance to the seminal vesicles from infected urine through the ejaculatory ducts from the blood stream as in septicæmia and from the lymph stream.

The symptoms of seminal vesicle infection include pain in the genito-urinary tract increased sexual desire to impotency and chronic urethral discharge which resists all ordinary methods of treatment.

Palliative treatment requires more time but the vesicles should be saved when possible. The prostate should always be treated with the vesicles. The author advises stripping the vesicles but applications vasopuncture and the injection of 10 per cent argyrol through the ejaculatory ducts.

In certain types of disease of the seminal vesicles surgery is necessary. Abscess formation requires drainage by vesiculotomy. The hard sclerotic vesicle should be removed.

Accessory treatment consists of wintergreen dressings, baking, etc.

The author's study was based on twenty three cases of gonorrheal infection and seven cases of non gonorrheal infection. The patients' ages ranged from 16 to 38 years and the duration of the disease from two days to four years. Gonorrhea was given as the cause in 45 per cent of the cases exposure to cold or dampness in 14 per cent and excessive use of alcohol in 6 per cent. In 35 per cent the cause was not known.

The conclusions drawn are the following:

1. In all cases of arthritis in the male rectal examination is necessary.

2. Every case of arthritis complicated by vesiculitis and in which there is a focus of infection in some other area should receive suitable accessory urological treatment.

3. Case of arthritis accompanied by vesiculitis without a history of gonorrhea should be examined for other foci.

4. Early treatment of the seminal vesicles is essential for good results. Improvement in arthritic changes is all that can be expected after changes have taken place in the cartilage and bone.

GILBERT J. THOM, S. M. D.

Battelle F G Elder O F and Lake W F  
Demonstration of Prostatic Enlargement by  
the Roentgen Ray After Distending the Blad-  
der with Air Preliminary Report J Am M  
S 1924 LXIX 1023

Cistography clearly demonstrates intravesical  
nontumorous median lobe enlargements of the prostate  
etc. It is not indicated in every case being of value  
chiefly in those in which additional information is  
necessary to decide whether an operation is re-  
quired and whether it should be done by the supra-  
pubic or the perineal approach. The technique is  
the following:

The usual intestinal preparation is ordered and  
just before the examination the bladder is emptied  
as completely as possible. The patient is placed  
on the Buckey diaphragm in the lateral position and  
the residual urine is catheterized and measured. A  
rubber band is placed around the penis to prevent  
the escape of air. To the end of the catheter is at-  
tached a rectal drip which has been loosely packed  
with cotton and sterilized. To the other end of the  
drip is attached a piece of rubber tubing about 8  
in long and  $\frac{3}{8}$  in in diameter just large enough  
to fit the drip snugly. To the opposite end of the  
tubing is attached a bulb such as the Obol No 1.  
The patient is then placed face downward with  
the symphysis directly in the center of the Buckey  
diaphragm lying flat with the spine straight. The  
buttocks are separated as far as possible and suf-  
ficient compression is made with a canvas band to  
hold them apart. Local anesthesia is induced to  
lessen the pain from the catheter and the injection  
of air.

The tube is adjusted at an angle of 20 degrees to  
direct the ray upward through the pelvic ring. The  
bladder is gently and slowly inflated and the ex-  
posure is made promptly. The bladder is inflated  
until the patient complains considerably, the require-  
ment from three to five bulbuls. Immediately after  
the exposure the air is allowed to escape gradually.  
The penetration and time of exposure are matters  
of judgment depending largely on the size of the  
patient. Patients of medium size require a 31 in  
spark gap 20 ma and an exposure of 8 seconds  
with the use of super speed films. Larger patients  
require a 4 in spark gap. LOUIS L. LARSEN, M.D.

Cassuto A. Urethral Stenosis Following Prosta-  
tectomy and a Case of Complete Urethral  
Obstruction. J Am M S 1924 LXIX 1023

In a thesis published in 1921 Grigorakis described  
eight cases of prostaticectomy in which urethral stric-  
ture was found. All were cured either by gradual  
urethral dilatation or by internal or external ure-  
throtomy.

Cassuto reports a case in which there was com-  
plete urethral obstruction. Only two similar cases  
have been described in the literature. In the great  
majority the obstruction was only partial. The

author's patient had had a prostatectomy a year  
previously and came to the hospital in a very toxic  
condition from retention of urine. All attempts to  
pass a sound failed and it was necessary to open the  
bladder and establish retrograde catheterization. On  
exploration a diaphragm of resistant cicatricial tissue  
was found at the site of the bladder neck and the  
lumen of the urethral canal. A Béniqué sound  
passed through the urethra was forced through the  
obstruction and a Mallect sound was left in the  
urethra for fifteen days. At the end of that time  
gradual dilatation with the Béniqué sound was be-  
gun. After six weeks the patient was able to urinate  
normally.

The obstructing diaphragm was clearly due to  
the previous prostatectomy.

The two other cases of complete urethral ob-  
struction following prostatectomy were reported by  
Pousson and Nicolich. In Pousson's case a cicatricial  
structure completely blocked the neck of the  
bladder and necessitated a surgical operation by the  
hypogastric route.

In Nicolich's case that of a man aged 80 years  
who had been subject to prostatectomy. It was  
impossible to introduce a catheter into the bladder.  
As Nicolich did not wish the patient to undergo  
the ordeal of a second operation he established  
permanent hypogastric drainage.

Although the completion of urethral structure  
rate the possibility of its occurrence should be  
borne in mind by the surgeon and during and after  
operation efforts should be made to prevent it.

W. A. BARNARD

Thomas D. A. Factors Responsible for Reduction  
of Mortality and Morbidity in Prostatectomy  
J Am M S 1924 LXIX 1023

In the author's opinion the refinements in the  
diagnosis and treatment of prostatic conditions have  
reached their maximum and further reduction in  
morbidity and mortality is not to be expected  
on this basis. The next advance must be in the  
education of the general practitioner and the laity  
so that operation will be performed earlier before  
the quantity of residual urine is large and the kidney  
and cardiovascular system have become damaged.

Thomas finds operation contraindicated in one-  
fifth of the cases referred to him for prostatectomy.  
The most important factor is the kidney function.  
Many deaths attributed to other conditions are due  
to poor renal function.

Second in importance is determining the operabil-  
ity of a case; the condition of the cardiovascular  
system and third is the blood pressure. On the  
basis of his experiences Thomas divides against  
operation when the systolic pressure is less than 120  
and the diastolic pressure is less than 60. To con-  
trol the heart complications which are present in  
a large percent of these cases he gives digitalis  
as a routine before and after operation.

In the choice of the anesthetic the condition of  
the lungs must be considered.

To assist him in determining the operative route Thomas uses the cystoscope. He employs the perineal route for cases of small inflammatory or fibrotic glands. The punch operation without cystotomy he regards as dangerous. In every instance in which the punch is used a suprapubic cystotomy is done. Thomas has performed the suprapubic operation in 76.2 per cent of his cases and the perineal operation in 23.8 per cent.

In the pre-operative care the bladder should be drained to permit decompression and readjustment of the kidneys. In most instances continuous catheterization is effective. Primary cystotomy is necessary when certain definite complications are present. Such complications were noted in 13 per cent of the author's cases.

Thomas regards the routine two stage prostatectomy as unwise. The operative technique and the method of enucleation are of less importance than the three safety factors discussed. When the patient is a good surgical risk the choice of the anesthetic is of secondary importance. The enucleation either suprapubic or perineal should be carried out by following the proper lines of cleavage and by preserving the external vesical sphincter thereby, avoiding the possibility of incontinence or occurrence of unnecessary hemorrhage and incontinence of urine.

When removing the prostate by the suprapubic route the author uses the intra-urethral technique. Hemorrhage is controlled by suture or by the pneumatic bag of Hagner or Pilcher. Thomas never finds it necessary to pack the prostatic bed and has never lost a patient from hemorrhage. Proper placement of the drains is of importance. The suprapubic wound should be closed in several layers so that healing will be more complete and leakage from the bladder will be less liable to occur.

When doing a perineal prostatectomy the author uses the Young technique except that he makes a rectangular incision. The most important precaution in this approach is the avoidance of the fibers of the compressor urethral muscle. This is accomplished by incising the urethra above the triangle ligament. The author describes special retractors for use in perineal prostatectomy.

The most important consideration in the post-operative care is the administration of saline solution. In Thomas' cases this is given under the breasts after the perineal operation and by proctocolysis after the suprapubic operation. Occasionally glucose and soda solution are used.

Thomas is against forcing the patient out of bed too soon but states also that he should not be allowed to remain in bed too long. His position should be changed frequently to prevent lung complications.

Thomas uses a special suprapubic drainage cup which is intended to keep the patient dry at all times. In many cases infection of the bladder makes daily total irrigation necessary. This will prevent ascending infection which may be a troublesome

complication. Forced water the administration of a urinary antiseptic and the cautious continuation of renal and cardiac stimulants are necessary for the best results.

Of 128 consecutive cases twenty three were not operated upon. Eleven patients were non operable, three refused operation, three died following preliminary cystotomy and seven died in the course of routine preliminary catheterization. Of the 105 others 76.2 per cent were operated upon by the suprapubic route and 23.8 per cent by the perineal route. The complications found are described in detail. The operative mortality was 3.8 per cent.

Thomas includes in his article numerous drawings illustrating the operative technique.

GILBERT J. THOMAS, M.D.

#### Lund F. B. New Growths in Undescended Testicles. *Boston M & S J* 924: 533

Lund discusses malignancy in undescended testes reviews the literature, recounts his experience in one of the large hospitals of Boston and gives his opinion regarding the best method of treating undescended testes.

When operating for malignant testes Lund removes by an intra-abdominal or extra-abdominal route all gland situated along the large vessels. He quotes Ewing and Mallory who believe all tumors of the testicle are of embryonic origin. They are classified as embryomata when of embryonic form and as teratomata when the ectodermic, endodermic and mesodermic elements are present.

It has long been believed that the development of malignancy is greater in undescended testes than in those normally placed. Lund cites the statistics from the literature on this subject and states that until recently he had never seen malignancy in an undescended testicle but that during a very short time before this article was written he saw four cases. These he reports in detail. He believes malignancy is more apt to develop in the undescended testicle than in the normally placed testicle and concludes that as a cure of the hernia is more often possible when the testicle is removed such removal is good surgery provided the testicle on the other side is normal.

GILBERT J. THOMAS, M.D.

#### Walker H. M. Testicular Grafts. *Lancet* 194: 330

Grafts of testicles from the lower animals are rapidly absorbed but good results are sometimes obtained since during the process of absorption a portion of their internal secretion finds its way into the blood stream. Voronoff found that grafts from the higher apes survive much longer in the human body than those from the lower animal.

Walker believes that the chances of success are greater if human tissue is used. He therefore employs ectopic testicles which though deficient as regards spermatogenesis are usually well developed from the standpoint of internal secretion. Lip

chutazsh et al it a little as 1 per cent of the total testicular tissue sufficient to maintain masculinity.

In the cases reviewed the grafts were embedded in the tunica vaginalis if this had not been the site of pathological processes. When the tunica vaginalis had been infiltrated the grafts were placed in the rectus muscle and in a subperitoneal pocket. The technique of the operation is described in detail. Examination of the case after operation showed a decided increase in the metabolism.

While the results obtained from testicular grafts are very promising there are limitations to the use of this method apart from the difficulty in obtaining material since the are still limited upon to treat a testicular condition alone. In congenital anomalies the deficiency is usually confined to the testicle but the remainder of the endocrine group later become involved.

The author concludes from his observations that a process of absorption goes on from the beginning and that a life of two years is the most that can be expected of graft. However the results in some cases may be permanent. A boy having signs of

uroclism who is operated on at the period of puberty will have the usual sex development and secondary masculine characteristics.

Severely interstitial cases are reported.

HARRY W. PLAGE MEYER, M.D.

### MISCELLANEOUS

Ward III W. F. M. A Technique for Cystoscopy in the Presence of Pus and Blood. *Lancet* 1941, 1, 9.

After washing the bladder the author injects through the catheter from 8 to 10 oz of sterile paraffin at body temperature with a Higginson syringe or an apparatus devised by him. Cystoscopy is then done in the usual manner. The urine usually sinks to the bottom leaving part of the ureter filled with foam like bubbles of air. After considerable experimental work two samples with a specific gravity of 0.81 and 0.86 were found to give the best results. When the amount of air present is small the terms seem feasible but further work must be done before it can be recommended as without danger.

CLAUDE PIERCE, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Ro enburg G Osteomyelitis and Injury (Osteomyelitis and Injury) 4th ed 1933

The relationship between trauma and osteomyelitis is not yet known. In many cases osteomyelitis appears as a metastatic suppuration following a very insignificant primary infection such as a folliculitis. It is to be assumed that this occurs only when the virulence and the number of bacteria overcome the bactericidal power of the marrow.

It has been demonstrated experimentally that trauma is not necessary for the development of osteomyelitis and this is in accordance with clinical observations. In answer to the question as to whether trauma is a predisposing factor the author states that to produce the condition in a given area experimentally the application of considerable force is necessary. If the trauma produces an open wound the problem is very simple; it is apparent that the osteomyelitis is caused by infection from without. In a closed wound there are three possibilities:

1. Bacteria from the blood stream may become lodged in the injured area.

2. Progenetic organisms in the long metatarsal in a hematoma caused by the injury, favorable site for multiplication.

3. The rupture of an already complicated bony focus may free microorganisms and stimulate them to renewed activity.

The following factors may be considered as possible factors in mechanical injuries: thermic injuries (chilling, burning), chemical injuries (fermentation, poisoning), bacterial injuries (all infections and contagious conditions), electrical injuries, and direct physical injuries (such as the pulling of powerful contractile muscles on their bony insertion).

With regard to the relationship between osteomyelitis and mechanical injury, a general conclusion is that the following question must be answered:

1. Was there actually an injury? Frequently the trauma mentioned by the patient is fictitious. In other cases it may have caused a local injury of some importance.

Was the injury such as could cause a disturbance of the normal relations of the bone? Brief interference with the function of part of the body might cause a disturbance; the bone marrow favors suppuration.

Did the injury occur at the site of the subsequent inflammation? The latter injury must be proved by effusion of blood or the signs of a skin

wound. However, osteomyelitis may arise metastatically from suppuration due to an injury and as the result of concussion of the bone may develop in a site indirectly affected.

4. Can the connection in time be proved? Although in a case of very severe injury there may be a very long period of latency, this period usually does not exceed fourteen days.

Many physicians are so convinced that trauma plays an important role in the etiology of osteomyelitis that they find it in their history whether it is there or not. In the author's opinion trauma can frequently be ruled out. In fifty-one cases studied by him a relationship between trauma and osteomyelitis could be recognized in only twelve.

OLIVIERA (7)

Henderson M S Chronic Sclerosing Osteitis of the Femur 1914

The author speaks of chronic proliferative sclerosing osteitis as a definite clinical entity due probably to a low grade infection. In the roentgenogram it is characterized by a spindle-shaped thickening of the shaft of the bone, reduction in the medullary cavity, and increased density. Complaints made of a deep boring pain which is usually worse at night or on exertion. The onset may be acute but typically the process is subacute or chronic. Examination reveals thickening of the bone. Deep pressure usually causes pain.

Observations in thirty cases are reported. The majority of the patients were male and under 30 years of age. The average duration of symptoms was six years. Operations were performed in seventeen cases. Of the twelve patients traced, nine were definitely relieved, two were relieved only temporarily, and one was not relieved. At operation both cortices were pried by multiple drill holes or the bone was gutted by chiseling off the cortex. The object of this procedure was to improve the circulation, the idea being that a part of the trouble was due to impairment of the circulation resulting from the very dense bone. Microscopic examinations of the ivory-like cortex revealed evidence of overactivity in the production of bone with consequent choking off of the blood vessels.

The differential diagnosis is most important since the condition may be mistaken for syphilis, sarcoma, latent disease, or osteitis fibrosa cystica. Attention is called to the tendency of syphilitic osteitis to form an irregular tumor thicker on one side than the other, instead of the spindle-shaped swelling to the involvement of the ends of the bone and to the fatty outline on the X-ray picture which often distinguishes the condition from chronic osteitis with its smooth periosteal outline.

Differential Diagnosis *Chronic Sclerosis* & *Osteitis (Hemiplegia)*

	Sex	Age years	1 fec loss ology	Tra m	Supra- no	Du lo	F l rude es	Fec leuc yow	F l red in	R g pay lin	Site
Sci ros g o s i l l	M les	3	Yes	I f q ent	Ce renal	Long	Yes	M y be green	Seldom	Proli f	hal from puby-
Se m e n l y z	M les pt hile	Any	N	F q ent	N	Sho t	N e a l y	La	Of en	Des ru ion	Ephrysis
Syphili	Males		N	Ch	N	Long	Yes	N	N oe	Proli era uo	ha pubys
P ge disease	M les	14	N	N	N	Lo g	N	N one	N none	Proli o	E les sh l

Coley W B The Prognosis in Giant Cell Sarcoma of the Long Bone 1 5 6 924 1 32

This article is based upon the data and clinical results in a series of fifty cases treated by the author.

Coley reviews the literature and offers his opinion regarding the treatment of a prognosis of giant cell sarcoma. According to one of the so-called benign giant cell tumor is entirely an inflammatory process with exuberant granulation tissue and is due to trauma. He believes that these tumors metastasized but he predicted that this is incorrect.

Of twenty patients who were subjected to amputation of the metatarsals and only two remained well. Of four treated by resection one died, the operation on one led to metastases and two remained well. Therefore only five of the patients were known to be living and well after three years. One must conclude that few of the neoplasms were benign giant cell tumors.

Bloomfield was one of the first to attempt a scientific study of the malignancy of giant cell tumors. He established the fact that the great majority are only locally malignant.

Until recently most of the tumors were treated by amputation because the pathologic report of the tumor as sarcoma and regarded it as malignant.

In the authors' opinion, the results of this study suggest that the use of a single-agent chemotherapy regimen, such as cyclophosphamide, may be a reasonable option for the treatment of patients with advanced-stage breast cancer. The results of this study also suggest that the use of a single-agent chemotherapy regimen, such as cyclophosphamide, may be a reasonable option for the treatment of patients with advanced-stage breast cancer.

The most important aid in the diagnosis is exploratory operation. In planning the treatment from the literature is largely the result of the fact that the great majority of our cases have been cases in which exploratory operation was performed.

There is at present no uniform method of treating giant cell sarcoma. The clinical history should be carefully taken and supplemented by a thorough physical examination and an X-ray examination. In many cases however, an accurate diagnosis can

not be made positively without a microscopic examination and sometimes not even with it.

For simple cases the author advocates curettage followed by the application of carbolic acid in the cavity. In a large percentage he uses in addition the mixture of resorcinol and salicylic acid prodigious, sometimes combined with X-ray or radium treatment.

In the series of cases reviewed amputation was performed nineteen times but in only ten cases as a primary measure. In nine cases it was done because of failure of conservative measures to control the disease.

At the present time Colby has a number of cases under treatment with X-ray and radium. Most of them are showing improvement but in none has the tumor disappeared or has sufficient time elapsed for a cure. Colby believes it is time to introduce radium into a case, if of benefit after curettage.

Of a series of eleven patients treated by amputation and of metastases. Secondary amputation was done in eight cases because failure of the first to effect a cure or because of complications. Of the fifty patients in the series thirty-two are living. Six have not been traced. In twenty-four cases the limb was ailed. Most of the patients were between 20 and 30 years of age. Fifty-six per cent gave a history of trauma.

RUFERT V. F. L. M.D.

1 hido R Stud n Joins (C l k t h n  
x ) 4 k f p th l t q 3 c h 4 4

Isid designates as the borderline the deeply stained and therefore distinct variety sometimes duplicated which is seen in all small specimens at the borders of the cartilage and bone of the bone of the joint. In studies of the border line specimen taken from cases of the bursitis and fracture of the patella he concludes that the bone substance is nourished by blood vessels and that the substance of the cartilage derives the greatest part of its nutriment from the joint fluid.

The borderline is therefore not only an architectural line but also the dividing line between two orders of tradition. As injuries of the cartilage on the one hand and change in the cartilage on the other may attack and destroy the borderline the

disappearance of the borderlines may result from (1) chemical changes in the articular fluid (injury of the cartilage) and (2) toxins in the capillaries of the bone marrow  
 LOEFFLER (Z)

Martin Lagos F Volkmann's Ischemic Contracture (Contractura isquémica de Volkman) *Cl y 1 b 1924 III 15*

From a study of the literature and clinical cases the author reaches the following conclusions

1 The application of even a loose bandage may be followed by ischemic contracture if the brachial artery is compressed as for example when it is elevated by the superior fragment of a supracondyloid fracture. However a factor essential for the development of ischemic contracture is severe injury of the anastomotic arteries of the brachial artery their compression by a hematoma or their obstruction by an embolus

All factors capable of producing an ischemia limited to one muscle group (severe contusions crushing etc) may produce this contracture. The most frequent cause is a supracondyloid fracture associated with extension and posterior dislocation of the elbow.

3 Of the three theories offered to explain Volkman's contracture the oldest that attributing it to vascular lesions is the only one which satisfactorily accounts for its pathogenesis

4 The anatomy of the vessels muscles and aponeuroses of the elbow explains why after a supracondyloid fracture with extension posterior dislocation or extensive contusion the flexor muscles are the ones which suffer necrosis

5 According to the works of Fletcher Hill and others the first contracture is caused by the lactic acid formed in the muscle fibers and not transformed because of insufficiency of the supply of oxygen. This is followed by coagulation and necrosis of the muscle substance

6 Bardenheuer's theory that the necrosis is due to the carbonic acid produced by venous stasis has not been experimentally proved

7 The theory ascribing the condition to the sympathetic nerves cannot be confirmed because the action of the sympathetic fibers upon muscle is not known

8 The pathological anatomy consists in a hyaline degeneration of the muscle substance produced probably by the coagulating action of the lactic acid and followed by destruction and replacement by connective tissue

9 In every case of fracture dislocation or severe contusion of the elbow the distal and ulnar pulse should be watched not only immediately after the injury but also during the three or four following days

10 When the radial pulse fails and blood does not flow in spite of all attempts at bloodless or operative reduction of the fracture or dislocation and freeing of the compressed artery an arteriotomy should be done

11 When the contracture has already developed bloodless treatment by means of apparatus is effective only if the lesion is relatively recent

12 Klapp's operative treatment resection of the wrist is the method of choice being simple rapid and without danger

13 Before a patient with Volkman's contracture is operated upon an examination should be made to determine whether there is a lesion of the nerves of the forearm in order that a neurolysis or even resection of the traumatized nerve may be done at the same time if necessary

14 If there is a healthy group of muscles in the forearm in a case of irreparable nerve lesion the bone resection should be done first and later at a second operation anastomosis of the healthy muscles to the end of the principal injured muscles should be done  
 W A BRENNAN

Bergmann E Tuberculous Spondylitis and the Results of Its Conservative Ambulatory Treatment (Die Spondylitis tuberculosa und die Resultate ihrer konservativen ambulanten Behandlung) *g 1 ch f r h p l f H Ch 19 3 XXI 1 8*

The author found 342 cases of tuberculous spondylitis among 33 000 pathological cases which included 1 497 cases of surgical tuberculosis. Among the varieties of surgical tuberculosis tuberculous spondylitis stood second. Fifty three per cent of the patients were males and forty seven were females. In the author's opinion the influence of trauma has been greatly overestimated. In the first five years of life the condition is more frequent in males than in females but in the third decade and thereafter it is more common in females

In regard to age it was found that in almost one half of the cases the condition developed in the first five years of life and in two thirds in the first decade. The highest incidence was reached in the fourth year

The site of the disease was as follows: cervical vertebrae 9 per cent dorsal vertebrae 53 per cent lumbar vertebrae 38 per cent. The vertebrae most frequently involved were the twelfth dorsal (24.6 per cent of the cases) the eleventh dorsal (20.5 per cent) and the first lumbar (18.7 per cent)

The number of vertebrae attacked was one in fifty one cases two in 217 cases and three or more in fifty four cases

Abscesses were discovered in 20 per cent of the cases. They were most frequent in disease of the lumbar spinal column (43 per cent of the cases) and least common in disease of the cervical spinal column (6 per cent). In 90 per cent of the cases complicated by abscess more than one vertebra was diseased. Paralysis was present in 6 per cent. The author ascribes the relatively low incidence of abscesses and paralysis to the fact that the greater number of the severe cases were admitted directly to the hospital without passing through the outpatient department. In 85 per cent of the cases of paralysis





diagnosis of spindle cell sarcoma having been made the upper end of the femur was removed with the head and a bone graft was inserted. Two years later the patient was able to walk without crutches. The X ray showed extensive tumor formation in the upper end of the femur. If this had been sarcoma operation would have been futile. Therefore an exploration should have been done to determine its character. If the tumor had been a bone cyst the fracture would have insured healing in the best position. A chondroma myoma or giant cell tumor should be removed with the electric cautery.

CASE 8. This was a case of giant cell tumor involving the upper end of the femur. The head, neck, trochanter and upper third of the shaft were resected and the upper end of the fibula transplanted to the defect. A satisfactory result was obtained.

CASE 9. In this case a chondroma of the upper end of the femur was excised. The X ray showed a central shadow in the neck of the femur.

RICHARD S. REICH, M.D.

FARR C. E. Suppurative Arthritis of the Knee  
t 5 2 9 4 1 3

The author reports three cases of acute suppurative arthritis of the knee. The patients were girls 5, 6, and 10 years of age. Operation followed by early active mobilization gave a successful result. In two of the cases the knee condition followed general sepsis and in the other was caused by penetration from without. In one case adjacent osteomyelitis developed and subsequently involved the joint by perforation.

ROBERT A. FINCH, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

LYLE H. H. M. The Treatment of Dislocation of the Hand  
1 5 2 9 4 1 3 6

The author calls attention to the importance of the physiological balance of the hand and the formation of the carpal and metacarpal. The most important ligament of the thumb is the basal phalanx of the thumb possesses many of the functional and developmental characteristics of the phalanges especially its freedom of motion. The plane of the thumb is almost at a right angle to the other fingers. In planning it should be borne in mind that holding the thumb in the same position as the fingers causes fatigue. The creases of the palm and fingers have the same function as the wing freedom of motion. The formation of new synovial lines at right angles may result in a serious functional handicap.

If it is necessary to incise the tendon sheath the sling through which the tendons glide should be avoided. The chief sequelae of injury are loss of substance, skin contractures, painful stumps, joint stiffness, adherent tendons, and functional position of the wrist, flat hand, claw hand, loss of grasping power, and clawing of the paraspinal.

Operative tendon reconstruction should not be undertaken until joint stiffness has been overcome.

The flat hand is treated by the use of a Goldthwait strap or by manipulation under anesthesia and strapping until the relaxation of the ligaments is overcome.

Fractures of the metacarpals should be treated by traction with flexion of the metacarpophalangeal joints to prevent the development of claw hand. The latter is a severe disability. When it develops it may be treated by Stiles operation in which the flexor sublimis is used as an extensor of the interphalangeal joint.

In adduction deformity of the thumb Baldwin's operation arthrodesis at the basal thumb joint in the proper position is useful. In cases of thenar paralysis the Steindler operation may be employed. The tendons in using a portion of the long flexor sutured to the posterior surface of the basal phalanx to act as an adductor.

The author's summary of the treatment of contractures of the metacarpophalangeal and other joints of the hand and wrist with splints and casts is very complete. This requires painstaking care, patience, perseverance, and time.

The end results of mobilization under anesthesia are disappointing. Therefore the method has been very little employed since the war.

In regard to the treatment of painful stumps the author lays emphasis on the inflammatory tissue surrounding contractures. In many cases local operative interference is worse than useless. If it is impossible to amputate through healthy tissue it is better to leave the fingers alone until the pain disappears.

In the treatment of the mutilated thumb the author resorts to the use of abdominal flaps and two types of bone transplantation: that of Nicolaoni with autoplasmic transplantation and that of Hugueny which consists of finger substitution.

ROBERT A. FINCH, M.D.

HESS E. Fracture Transplantation of Half a Joint to Rest Mobility  
t 5 2 9 4 1 3 6  
h l b e c l k e k m b l t t e  
R C k P g f G h h l t g a d 9 2 3

The author has previously reported fourteen cases of mobilization of the finger joints. In this article he reports eighteen more. One especially interesting case was that of a laborer 34 years of age who nine years ago sustained a subluxation of the metacarpophalangeal joint of the thumb which was followed by ankylosis in a position of maximal adduction. The thumb was in the palm of the hand and the new subluxation of the index finger at the metacarpophalangeal joint in 15 degrees of hyperextension. Attempts at flexion revealed contraction of the extensor tendon. This resistance was overcome after some exertion (snapping finger) and the finger flexed to degrees.

A two stage operation was performed. The first stage consisted in open reduction of the thumb which

necessitated resection of the metacarpal head. The after treatment consisted in massage and movement. Healing occurred without reaction.

Two months later the index finger was mobilized and a plastic operation was done on the extensor tendon. The tendon was found thickened and adherent to the phalangeal joint. Subcutaneous scar tissue was removed and the joint opened. Reposition was found impossible even after severance of the lateral ligaments. The metacarpal head was sawed off, wrapped in a sterile dressing, and placed aside. A 1 cm section of the metacarpal diaphysis was then removed without saving the periosteum, and the metacarpal head sutured to the shortened diaphysis with five or six sutures through the periosteum. After this reposition was effected easily and the joint assumed its normal aspect. The capsule and ligaments were sutured. Healing occurred without reaction. Massage and movement were begun early. One month after the second operation the result remained satisfactory. The hand was of normal shape but movement was somewhat restricted. The patient has been able to resume his work.

(1855) (2)

**Lauffe C R.** The Treatment of Tuberculous Osteo Arthritis of the Knee with the Use of Grafts. (*Le traitement des ostéo-arthrites tuberculeuses par la méthode des greffes*). *Rev d'hop* 9 4 5

Abundant oxygenation and total lack of oxygen are unfavorable to tuberculosis. The poor circulation in the epiphyses favors localization of the tubercle bacillus but the rich circulation in the diaphyses destroys it. Tuberculous infection when established is favored also by anemia due to occlusion of the capillaries and destruction of the arterioles. Rarifying osteitis develops and fungoid masses penetrate the articular cartilage and the synovial membrane, tuberculous arthritis resulting. The synovium, which is richly supplied with blood, is unfavorable to tuberculosis.

The author's operative technique for the tuberculous knee is as follows:

After five or six days of rest in extension an Esmarch band is applied to the thigh and two lateral incisions from 8 to 10 cm long are made two finger breadths distal to the patella. The incisions are made through the skin and subcutaneous tissue except at the ends where the muscles are separated and the periosteum of the tibial and femoral diaphyses a finger breadth from the conjugal cartilage is incised in the shape of a cross. A tunnel is then bored obliquely toward the epiphysis across the conjugal cartilage just to the articular cartilage. While the graft is being removed from the opposite tibia with a chisel, bleeding is controlled by means of a gauze pack. Two large grafts from 10 to 15 cm long for lateral propulsion for each side of the knee are lifted up. A small graft is inserted in each of four holes bored in the epiphysis so that the end will make close contact with the end of the lateral

pross which extend from the tibial to the femoral diaphyses and are fastened in the subcutaneous tissue with catgut stitches.

After the operation extension and counterextension are maintained during the month required for solidification of the graft. After two months the patient is gotten up with a simple dressing and slight mobilization of the knee is allowed. For the next few months he walks with the aid of an apparatus. No special treatment is given. By the end of five or six months the graft has grown to the size of a small rib and has become firmly fused. Pain in the knee on palpation has ceased. The subcutaneous bone pross are removed. After from ten to twelve days massage and manipulation of the knee are begun.

The author attributes the success of his technique to: (1) the use of osteoperiosteal autogenous grafts; (2) rigorous asepsis; (3) careful separation of the graft bed; (4) rapid transfer of the graft to its new bed; (5) implantation just to the spongy tissue of the bone; (6) absence of contact with a foreign body; (7) displacement of the periosteum of the host bone which helps to envelop the graft; and (8) careful immobilization of the region operated upon.

The graft consists of periosteum, cortical bone and spongy tissue. It is best removed with the chisel because when bone is wedged the bone dust blocks the Haversian canal and prevents the entrance of the capillaries. Grafts without periosteum do not survive longer than two months. Two important stages are vascularization and individualization which prevents the presence of the newly formed elements. The resistant external periosteal layer protects against the latter and the deep layer permits easy penetration by the new bone. The subcutaneous tissue with its rich blood supply favors the growth of granulation tissue. The healthier and more solid the subcutaneous graft the more active will be the introsseous segment.

The function of the graft is: (1) to favor through the Haversian canals rapid and abundant penetration by the capillaries thus creating the arterial supply and diminishing venous stasis; (2) to provoke a condensing osteitis and thus stimulate ossification; and (3) to form by its periosteum a thick solid encasement which is continuous at the extremities with the periosteum of the tibial diaphyses.

In all of the author's twenty cases of tuberculous knee joints and in his case of congenital placing of the graft was followed by marked improvement in the general condition, return of the appetite, normal color of the mucous membranes, and disappearance of the jaundice and cachexia. Lauffe attributes the improvement to the rapid restoration of an active increased arterial circulation with diminution of the piphysal venous stasis which is unfavorable to tuberculosis. In none of the knee joint cases has there been any local or remote reaction or any displacement of the diaphysis. Fat

infiltrates the subcutaneous tissues about the knee. In the advanced cases in which there was a difference between the symmetrical prominences of the femur and tibia at the time of operation, this showed no accentuation even after five years. During the actively acute stage operation is contra-indicated.

WALTER C. BURKET, M.D.

### FRACTURES AND DISLOCATIONS

Grimault, L. The Final Results of Osteosynthesis in Complicated Fractures (*L'ostéosynthèse dans les fractures compliquées: l'ultime résultat*). *Arch. fr. nécol. d'orth.* 1944, 1: 10.

The maximum period of observation in the cases reported was three years. From his experience in these cases and from the experience he gained during the war, the author draws the following conclusions:

1. Every complicated fracture is finally sufficiently amenable to treatment by osteosynthesis if this is necessary.

2. If drainage or incomplete suture is indicated because of doubt regarding the surgical disinfection, delayed osteosynthesis may be done after from eight to fifteen days.

3. In infected fractures osteosynthesis should be done only when reduction is impossible by other methods.

4. When there is a choice of methods, metallic fixation and periosteal detachment should be restricted to the minimum. When the fracture has consolidated it is not necessary to remove the metal unless a fistula develops or there is redness of the skin or sharp pain on pressure.

5. When a complicated fracture treated by excision, osteosynthesis and primary suture becomes healed by primary intention without any local inflammatory reaction, its course is that of a closed fracture treated by osteosynthesis.

6. When there is local infection after a complicated fracture treated by osteosynthesis has become consolidated, rarefaction of the bone around the wires is rare and when it occurs will not disturb consolidation.

W. A. BRENNAN

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

A Clinical and Anatomical Pathological Contribution to the Study of Traumatic Lesions of the Middle Meningeal Artery (Contributed by the author to the 11th International Congress of Medicine, 1923, Rome)

The author reports in detail three cases of fractured skull. In one an operation for the removal of a blood clot was followed by recovery in the two others death occurred soon after the injury. He reports the symptoms, the physical signs, the operative procedure, and the autopsy findings in the two fatal cases. Chivalry reports that in 117 cases of cerebral hemorrhage the bleeding was due to a lesion of the middle meningeal artery in seventy-two, an injury of the venous sinus in thirty, lesions of the subarachnoid vessels in fourteen, and lesions of the vessels of the diploë in five. Treves states that 85 per cent of intracranial hemorrhages are due to lesions of the middle meningeal artery and 15 per cent to injuries of the venous sinus. In a study of seventy-five cases found that the majority of the hemorrhages were from the middle meningeal artery and that only rarely did the bleeding come from the sinus, the vessel of the pia, the internal jugular, or the vessels of the diploë.

The middle meningeal artery has a long course and a large lumen. Of its two terminal branches the anterior is much larger and longer than the posterior. It supplies the anterior and posterior part of the dura, while the posterior branch, running along the squamous part of the temporal bone, supplies the corresponding dura. For about three quarters of its course the artery lies in a sulcus made by the two venæ comites. According to Poland these can be injured more frequently than is generally believed because of their exposed position, their size, and the fragility of their wall.

Injury to the meningeal artery followed by hemorrhage may occur without fracture of the skull. In general, traumatic hemorrhages are either extradural, intradural, or intracerebral. In rare instances bleeding may occur in the cerebral substance proper or within the ventricles. The extradural hemorrhage may be diffuse, extending over the entire temporal or occipital area. Such hemorrhages constitute about 8 per cent of intracranial hemorrhages occurring in adults. Extradural lesions are rare in children because in the young the dura mater does not separate easily from the bone and consequently blood cannot easily collect between the two structures. In the adult separation of the dura from the bone may result from trauma. In case reports by Kroenlein there was extensive separation of the dura from the

bone from the region of the transverse sinus to the occipital foramen and this produced compression not only of the occipital lobe but also of the cerebellum. The coagulum formed has the characteristics of the ordinary blood clot. According to Cerard Marchand clots usually measure from 8 to 10 cm in length from 8 to 9 cm in width and from 6 to 7 cm in thickness.

The middle meningeal artery may rupture in that part running through the skull for men or in that in the osseous canal. Rupture may occur also in any one of its terminal branches, the anterior, median, or posterior, but this is less frequent. Usually the injury to the vessel occurs on the side subjected to trauma. The extent of the hematoma varies with the severity and site of the injury and the size of the vessel traumatized. If death does not supervene and the clot is not too large absorption may occur. The hematomata of the pia become absorbed more easily than extradural or subdural clots. The extradural clot is slow to absorb because of the paucity of surrounding capillaries and lymphatics. A hematoma may become septic and suppurate.

In discussing the symptoms of cerebral hemorrhage it is necessary to distinguish the cerebral from the bulbar symptoms. The severity of the manifestations varies according to the size and position of the hematoma. If the hemorrhage is extradural the symptoms are according to the rapidity with which the bleeding occurs and frequently develop a few hours or a few days after the trauma. If the lesion is intracerebral the incidence of a clear interval between the time of the injury and the onset of the symptoms is a conclusive sign of the presence of an extradural hemorrhage to the exclusion of all others. In cases of sudden violent injury however the clear period may be obscured by a concomitant manifestation of concussion or contusion, a temporary shock. Frequently a blow causes a sudden fall in the blood pressure which temporarily decreases the flow of blood but as soon as the pressure begins to rise the hemorrhage increases. In the typical case shortly after loss of consciousness the onset of symptoms—loss of consciousness, forced expiration, and fixed pupils.

Raymond recommends examination of the eye fundus in all cases of doubtful cerebral hemorrhage. Frequently hemianopsia, abnornal position of the pupil, and edema of the pupil are found on the side of the lesion. On the opposite side there is paralysis. If the hemorrhage occurs in the left side of the brain it may be difficult to distinguish from convulsions often terminating in the clear interval paralysis of the rectal and bladder sphincters is usually a terminal manifestation. The clear inter-



Reconstruction of the femoral artery by means of a collateral artery according to the Dohrowal kaya Kramarenko method can be successful only when the collateral path is sufficiently large in other cases better results are obtained by a modification of this method worked out on the cadaver by Lassitzin. In this modification the chief branch is divided beneath the point at which the deep femoral artery branches off turned upward and sutured into the central end. The blood then flows into the deep femoral artery. Goolman divided the deep femoral artery beneath the site of injury turned it up and closed the defect with the posterior wall of the segment.

In a rational operation on the blood vessels the incision must be made in the zone of the vasa vasorum the difference in the caliber and the angle of branching of the vessels must be borne in mind and the method used must be based on the structure of the vessels in the particular case.

The author has discovered a relationship between the structure of the abdominal aorta the form of the inferior thoracic foramen and the length of the twelfth rib. It is possible that in the future the structure of the vessels of the extremities may be determined from a single external feature such for example as the length of the twelfth rib and that this will become the basis for the choice of technique.

Wickes (Z)

## BLOOD TRANSFUSION

Stewart G N. Haemorrhage. *S. & G. Obs.* 94: 131, 1932.

Moderate hemorrhage is followed by a compensatory vasoconstriction an increase in the respiratory movements and an increase in the heart beat which aid the venous return to the heart and tend to maintain the normal blood pressure. When the loss of blood reaches a certain point the compensatory mechanism no longer maintains the filling of the heart and the quantity of blood ejected from the ventricles diminishes.

In acute hemorrhage the factor of chief importance is the loss of erythrocytes which interferes with the transportation of oxygen and the gaseous exchange in the tissues. As there is apparently no oxygen reserve in the tissues any interference with the transportation of this important element results in definite changes which have a striking effect on the nervous centers.

The merits of gum acacia are still subject to controversy. While this solution may maintain the vascular constituents of the blood through its colloidal bulk and thereby cause an increase in the blood pressure it does so by making the blood flow more slowly through the tissues. An increase in the blood pressure alone cannot be considered of great advantage.

Further knowledge of the tissue changes associated with hemorrhage would be of great value in efforts to aid the organism to return to normal.

WILLIAM J. PICKETT, M.D.

Schultz W. The Pathogenesis and Treatment of the Haemorrhagic Diatheses (Pathogenesis and Therapy of the Hemorrhagic Diatheses). *Samml. - g. Abh. d. G. d. V. d. S. St. f. v. chs. K. o. kh. 1932. 11, 5.*

Of the hemorrhagic diatheses (hemophilia purpura hemorrhagica of Weibull essential thrombopenic purpura and avitaminosis known as scurvy and Voell's Barlow disease) the first two receive chief consideration since the cause of the others—injury of the blood vessels—is apparent.

After a brief description of the technique of clinical examination the author calls attention to the difference discovered by Hayem between coagulation and hemostasis the relationship between these is only slight a fact that is often forgotten. In this connection Schultz discusses the Schmidt Morawitz Fuld and Spiro Nolf Klinger Bordet theories of blood coagulation. In an incised wound human blood coagulates within a few minutes when the vessel is in sufficient contact with wound tissue juice. The coagulation time is considerably lengthened when venous blood is drawn off and is more prolonged when the blood is caught in a vessel coated with paraffin. As a rule the process of coagulation begins on the surface where the blood comes into contact with the activators tissue thrombokinase and the sides of the glass receptacle. The colloidal chemical equilibrium of the albuminous bodies concerned—the antecedents of thrombin and the activators—is disturbed the fluid fibrinogen being rendered ineffective. The process of coagulation is hastened by warmth and retarded by cold. The part played by the formed elements of the blood is of little importance. Except in the cases of hemophilia and icterus we do not know the cause of the great individual and periodic differences in the coagulation of the blood under conditions of health and disease.

In dealing with the physiology of hemostasis the author points out that in hemorrhages from large vessels cessation of the bleeding is essential for coagulation and thrombosis. It is of importance also in hemorrhages from the capillaries. In the hemorrhagic diatheses the vascular system should be studied. The importance of the condition of the blood vessels in thrombopenic purpura has been generally acknowledged. In the authors opinion injury of the blood vessel is the cause of hemorrhage in thrombopenic purpura also and the thrombopenia is only a coincident condition. In hemophilia defects in the function of the blood platelets has not been proved. The chief factor in hemophilia is the condition of the vascular system.

Peculiarities in coagulation are of importance only exceptionally. There is no organ whose exclusion causes any change in coagulation or bleeding time.

With regard to the liver the author states that only the most severe injury combined with other toxic influences enters into the etiology of hemorrhagic conditions. General states of bile do not in general lead to retardation of coagulation or hemorrhagic diathesis but if in addition to injury

of the parenchyma of the liver there are other factors injurious to the vessels such as carcinoma, leucæmia, tuberculosis or toxic infection. The combination of these may lead to hæmorrhage. The kidneys and ovaries have no influence. The influence of the spleen is slight. Removal or arrest of function of the adrenals is unfavorable to the further course of purpura. The author has not found that Baedow dysfunction is followed by an appreciable change in the coagulation time of venous blood.

In the treatment narcotics are of value only because they prevent disturbing reflexes from the central nervous system. Venesection has a hæmostatic effect by causing a sudden decrease in the total amount of blood, therefore even in hæmophilia the opening of a vein is justified. Drugs are in general of little value. Calcium has no influence on the coagulability of the blood, gelatine though much used has in general only a local effect. Calcium chloride treatment does not have any decided influence on the hæmorrhagic diatheses. Adrenalin and ergot are not without danger as they may increase the hæmorrhage by their toxic action.

Biological substances employed in the form of serum to hasten coagulation are generally ineffective. Fresh serum has a slight influence in hastening coagulation when it is injected intravenously (1 c cm) and subcutaneously (30 c cm). Serum more than fourteen days old has nearly always a distinct and sometimes an extraordinary inhibitory power on coagulation. This is particularly true of diphtheria serum as it is obtained from the drug store. The same statements apply to whole and defibrinated blood. Gresson's rabbit serum had no effect in a case of hæmophilia. The activators of thrombin formation have a very marked effect in hastening coagulation outside of the blood vessel; for example when expressed tissue juice is employed. However the possibility of its use is limited to local application. When it is employed intravenously in animal experiments it caused death or a decrease in the coagulability of its blood. Schloessmann uses the juice of the thyroid locally.

As a rule prophylactic irradiation of the spleen with the roentgen rays does not cause any decided reduction in the blood lost but in a few cases of hæmophilia it has been successful. STABLE (Z)

## LYMPH VESSELS AND GLANDS

Koch J. and Baumgarten W. The Experimental Production of Tuberculosis of the Cervical Glands Through Oral and Conjunctival Infection and Its Relation to Disease of Other Organs. Particularly the Lungs. (Deutsche Medizinische Wochenschrift, 1904, 30, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000).

The question as to the route of infection in tuberculosis particularly tuberculosis of the lungs has

not been satisfactorily explained. It is obvious that a solution of the problem is not afforded by Flügge's droplets at least if their inhalation is to account for the immediate infection of the deeper regions of the lungs, the finer ramifications and the alveoli. This would be a physical impossibility as the suspended droplets would be caught in the moist mucous membrane of the upper air passages and at the same time the rapidly weakened air current would not keep them long in sufficient motion.

Experiments such as those of Cornet with dry infectious material and of others with artificially pulverized infectious material are supposed to demonstrate that dry dust or dusty fluid will reach the alveoli but in the large amount of material used and the violence of its incorporation they present conditions so different from the usual conditions that the evidence they offer is probably of slight value.

von Behring assumed that the infection enters by way of the mouth and pharyngeal structures chiefly in milk containing the bacilli.

The authors call attention to the fact that Koch and Moeller succeeded in obtaining in rabbits by means of oral infection an isolated chronic disease limited chiefly to the upper lobes of the lungs and resembling pulmonary tuberculosis in man. They infected the greater number of the experimental animals by mouth and then endeavored to determine how frequently such a disease could be obtained by feeding and what path is taken by the infection. By resorting to the simple experiment of dropping an emulsion of the bacilli into the mouth they were able to produce in these animals the typical disease picture of tuberculosis of the cervical glands and lungs. The disease in the glands resembled scrofula in man. Some of the bacilli introduced into the mouth and pharynx were taken up by the mucous membrane of the upper alimentary canal, resorption occurred by way of the lymph paths, the bacteria being carried in the lymph stream to the cervical duct, then into the blood stream and then to the right heart and the lungs. They were unable to reach the tracheobronchial glands (hilus) directly from the cervical glands as between these two groups there is no communication. The authors believe that the origin of human scrofula is similar to that of the experimental cervical tuberculosis in guinea pigs and rabbits and that pulmonary tuberculosis is a secondary development.

The same picture of tuberculosis of the cervical glands with secondary tuberculosis of the lungs is found when the infection occurs from the conjunctiva of the eye. Calmette called attention to the importance of this portal of entry. According to Most the collected lymph of the head flows through the lymph vessels of the neck into the superior vena cava. The authors believe that even under normal conditions the tubercle bacilli gain access to the organism through the conjunctiva of the eye more frequently than has been believed heretofore. If the infection is due to only a few bacilli it is possible for these micro-organisms to pass through the filter of



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The lungs the rg ut with th l all eathest attr h themselves her e their p f of entry l th auth ra q ther p e m n s with e s j u n t a l n l t t h a n l u s e l e m s t a t e d t h a n l e l t e l g u m n v a l u b e r u l i m a y o c c u r w i t h o u t i n f e r t h e g d i t m o t h e e f r a t e y t s a g e s

Wber F L A Case of Lymphogranulomatous Maligna Hodgkin's Disease with Recurrent Purpura and Hemorrhagic Symptoms Also Remark on Lymphogranulomatous Maligna J A Soc Med L L 4 17 Nov

This l m p t n l m t m a l g n a (H d g k i n s l a s e) i s f e r t t b t b e c a u s e o f u n l a t i o n l t h l i e t h r e c u r r e n t f e u r a n l h e m r h g e u t m l n s l a t e s t g e s i t m l l l a s e f b r o n s e l p e t e n t w i t h p m g l j g u r a p t t m t r a l m m u r w h l m a l i f f l i t c l u t c h e c m a l g n a t l a l t e l a f t a n l g n a l t t

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A t h s e j r a s e p r o c e s s i n t h e a f f e c t e d l y m p h a l e n r l t u e n u m b e r o f l y m p h o c y t e s i n t h e c i r c u m f e r e l t e r t o l i m i t h l b r e t u o l l a m o r e r l e a b o l t e r r l a t i p u l m p h a n u l a r l e u c y t o r b u t i n a d a p e r l a s e s e s p e c i a l l y t h e s e w i t h f e c t l s y l l r o m e g a l y t h e r e s t i e n l e u c j e n i a T h e l n m a r r o w i s o f t e n m o r e r l e s n l e d A m y l l e s a m l a r c h e n g e s i n t h e a r e m a y a c u r

Summers D The Clinical Significance of the Lymphological Changes in Hodgkin's Disease Am J Med Sci 1914 1 17 313

H o d g k i n l a s e i s f a s t g e n e r a l l y T h e c h a n g e s i n t h e l y m p h e l a n d j e n e r a s t r y t h a p p e a r a f a c u n t t e t u u t e l u l a r s u p p o r t i n g v a r i a l n u m b e r o f l y m p h e x e s w i t h n e r l e a r a n l m l i n u l a r g r a n t l a n d w i t h o r w i t h u t a n l m s t u r e f e w i n p h l

I n r n t h p a t h o l a l s e a p t i n t h e c a s e s a r e f o r l e a n t t w o g r o u p s T h e f i r s t g r o p i n c l u d e s t h o s e i n w h i c h t h a c e t e r t i e s t i g e a l a g r e s a r e l i m i t e d t o t h e l y m p h o i d t u e s t h a t t a s t h e l y m p h o i d e s p r o p e r e l t h l y m p h o i d f o l l e c l e s i n t h e p l e n t h w l l s l t h p o s t a l y s e l a n d o t h e r r e v i d u a l f o c i i n t h e l o n g b o n e m a r r o w k l n y s a l r e n a l u l c u t a r o u t u e s t e m e m b r e s e t c O f t h e c a s e s r e v e w e d t e n ( 1 p e r c e n t) b e l o n g e d t o t h i s g r o u p

I n t h e s e c o n d g r o u p a r e c l e f f e c t e s i n w h i c h t h a l l t a n t u c h e n g e s t h e s a m e a r e a n d i n t h e m e l o c a l i t e s t h d e a s e m e c h a n i c a l l y i n f i l t r a t e s t h e s k i n l t i s e c l e s t h l a s e s e l t h e s r o u m m e m b r e s a l l w e t s a s a n l l y i n t e c t p r e r e c a l l e e p a r t i a l l r e p l a c e s t e r a O f t h e c a s e s r e v e w e d ( 1 2 p e r c e n t) b e l o g e d t o t h i s g r o u p

E a t s f e l l l m p t n e e r e t h t e n l a r g e m e n t o f t h e a u x i l i a r y n o d e s a c r o d r y t o i n v o l e m e n t o f t h e t h o r a c i c o r e v i d u a l a n l e n l a r g e m e n t o f t h e l i g u l a n l n s a s e o n l y t o i n v o l e m e n t o f t h e a l l i m i n l n e s T h e s e o b s e r v a t i o n s s u g g e s t t h a t t h e p r e s t i e a g n t e n t e r s t h e b o d n o t t h r o u g h t h e s k i n b u t e x c l u s i v e l y t h r o u g h t h e m e m b r e s a n l p r o b a b l y o n l y t h r o u g h t h e m u c o s m e m b r e s o f t h e g a s t r o i n t e s t i n l t r a c t I l w e r t h e e x p r a t r y t r c a n n o t b e p o s t r h e x c l u d e d T h e b r u n t o f a t t a c k i n H o d g k i n a d s e a s e r b o r n e d y t h l y m p h a n e s f t h e a b d m e n t h r a s c k a u l a a n d g r o n a n d b y t h e a u x i l i a r y l y m p h l a y t e m t c l u d i n g t h e p l e r n a n l l e r a n d o t h e r r e v i d u a l l y m p h o i d c o l l e c t i o n s i n v a r i o u s p a r t s

of the body. The lymphoid follicles which lie in the submucosa of the gastro intestinal respiratory and urinary tracts practically always escape. From this it is apparent that the provocative agent in Hodgkin's disease has a selective action on certain groups of lymphoid tissues. This peculiarity it shares with chronic lymphatic leukaemia.

Hodgkin's disease may be revealed most prominently in organs other than lymph nodes. Enlargement of the spleen, the thymus or the liver may be the predominant feature, the associated lymph node enlargements being of secondary importance. The condition may be divided clinically and anatomically into five types as follows:

1. Hodgkin's disease of the regional lymph nodes
  - (a) involvement of the abdominal nodes predominant (28 per cent)
  - (b) involvement of the abdominal and thoracic nodes predominant (43 per cent)
  - (c) involvement of the nodes of the neck predominant (7 per cent)
2. Involvement of the thymus predominant
3. Involvement of the spleen predominant
4. Involvement of the liver predominant
5. (A) Axillary involvement (sequential to cervical or thoracic lymph node enlargement) (B) Inguinal involvement (sequential to abdominal lymph node enlargement)

The author emphasizes the fact that in Hodgkin's disease the skeletal muscles may be extensively destroyed by tissue of the same sort as that in the lymph nodes.

The bone marrow in Hodgkin's disease may show hyperplastic changes particularly in the eosinophiles and eosinophilic myelocytes or may be replaced even extensively by tissue identical in composition with that of the diseased lymph nodes.

Evidence is presented which tends to show that in the reactions in the lymph nodes and in the bone marrow there is a certain parallelism between Hodgkin's disease and chronic myelogenous leukaemia. This suggests that the two diseases are fundamentally related and that they probably represent different quantitative responses to the same type of provocative agent.

It remains to be determined whether Hodgkin's disease is an inflammatory or a neoplastic process. The fact that the histological composite tends to maintain its individuality throughout all changes of environment appears to constitute an argument in favor of its inflammatory nature.

One of the cases reviewed presented a new phase in the pathology of Hodgkin's disease characterized by massive enlargement of the liver due to structural changes in the walls of the portal vessels which were strictly comparable to the changes encountered in the lymph nodes, including the characteristic cell composite and the overgrowth of connective tissue. Similar changes were present in the walls of the larger veins of the spleen and the medulla of the suprarenal capsule.

Hodgkin's disease is an affection of the hamolytopoietic apparatus. Its histogenesis is determined by (1) preliminary hyperplasia of lymphoid cells in various parts of the body and (2) the discharge of mononuclear and multinuclear giant cells from the bone marrow with or without eosinophiles and eosinophilic myelocytes and their arrest by the hyperplastic lymphoid deposits in pursuit of their function as filters. The fibroblastic reaction in the recipient tissues represents a mechanical process designed to support the excess of cells by which they are burdened.

MORRIS H. KARR, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Holzknicht G. 1. The Safety Value of Direct Measurement of the Surface Dosage in Roentgenotherapy (D. S. Ch. r. h. e. t. l. r. d. k. t. n. M. e. s. s. u. r. g. e. r. O. b. j. e. c. t. s. e. n. d. o. n. s. i. n. d. e. r. r. o. e. n. t. g. e. n. t. h. e. r. a. p. y. )  
M. u. k. e. n. m. e. d. W. i. s. s. h. 923 ix 231

The author emphasizes the importance of measuring the total amount of the rays used from the beginning to the end of the irradiation. As the usual dosage employed may give rise to injury because of alterations in the apparatus. Improper filtration in correct measurement of the distance etc. He recommends for double protection the simultaneous irradiation of one of the dosimeters on the patient's skin.  
R. u. m. p. (G.)

Dodda F. C. and Webster J. H. D. The Metabolic Change Associated with X-Ray and Radium Treatment. L. i. p. 924 vi 533

The investigation reported in this article was prompted by the recent hypothesis of Andersen and Kohlmann that roentgen sickness is like an acute uræmia. It was made on cases from four clinical groups: (1) cases of leukaemia, (2) cases of exophthalmic goiter, (3) breast cases given postoperative radiation, and (4) malignancy in various parts of the body treated by irradiation.

Cases in Group 1 were treated with radium to the enlarged spleen with or without roentgen irradiation of the long bones or enlarged glands. Those in Group 2 were treated with roentgen radiation to the thyroid (and thymus in some instances). In a few of Group 3 cases and in all of Group 4 cases the roentgen ray wave length was shorter; therefore a wide range of roentgen and gamma wave lengths was employed. Attention was given mainly to the urinary findings but some observations were made on the blood and faeces.

All of the patients of this series were in bed and maintained on a constant diet. The urine was collected in twenty-four hour specimens and these were completely analyzed. All cases were examined for at least a week before treatment was begun in order to fix the normal levels of the urinary constituent. Specimens were analyzed as long as the patient remained in the hospital. In each specimen the volume, urea, uric acid, ammonia, acidity, total nitrogen, ammonia coefficient, phosphates, chlorides, creatinine, and diastase were determined.

After a careful review of the results it was thought best to classify the observations according to the site of irradiation. These fell under four headings: (1) abdominal irradiation, (2) cervical irradiation, (3) thoracic irradiation, and (4) irradiation of any other part of the body.

Irradiation of the head, thorax and limbs produced no change in the metabolism of the cases examined.

Irradiation of the abdomen and spleen caused definite urinary and blood changes. There was a sudden fall in the twenty-four hour amounts of urea, uric acid, ammonia and titratable acidity, creatinine, total nitrogen and phosphates. The volume of the urine was also greatly decreased. After about three days the excretion of these substances rose to about the normal figure. In the case of uric acid and phosphates the twenty-four hour amounts continued to increase after the original level had been reached but returned to normal again in about five days. The chloride content and diastase showed an immediate increase and returned to normal in from three to six days. The ammonia coefficient showed an increase for about three days and fell to normal in six days. The blood analysis showed a marked decrease in the urea content with very little change in any other of the blood constituents. These findings were made in every case of the group in question. Examination of the faeces showed an immediate increase in the faecal content; this was almost solely in the neutral fat fraction.

Irradiation of the cervical region produced no change in the metabolism demonstrated by the blood and urine except an immediate fall in the excretion of urinary creatinine. On the day after exposure the creatinine almost disappeared from the urine and recovery did not take place until about the fourth day. Practically no alteration in the blood-creatinine content was found.

The findings of this study and the conclusions drawn from them are summarized as follows:

1. Similar results were found in patients treated with roentgen or gamma rays.

The changes in metabolism produced varied with the site irradiated. It appears that the effects of irradiating the abdomen can be explained by a temporary inhibition of the functions of the principal abdominal glands such as the liver, pancreas and kidneys. No support to the Andersen and Kohlmann theory is given as there was no evidence of nitrogen retention such as would be expected if uræmia had been induced.

2. Three patients with very well marked roentgen ray sickness were examined but no change in their metabolism could be detected following exposure to the rays. The sickness in these cases was apparently psychical.

3. A considerable number of patients have been treated prophylactically with calcium chloride etc. before irradiation and a few with sodium bicarbonate in all of these the reaction was less marked.

ADOLF HARTU G. M.D.

Pfahler G E and Widmann B F Measurements on Two American and Two German Deep Therapy Machines by Means of the Duane Method and the Friedrich Iontoquantimeter *Am J Roentg* 1 1924 21 26

This investigation was undertaken to determine (1) the relative output of the four machines (2) the relative value of the German and the American units of measurements and (3) the relative value of the two measuring instruments. However various difficulties were encountered which made the results not entirely satisfactory. Therefore the authors concluded that giving practical clinical observations would accomplish more than publishing a great mass of figures which are not in entire accord.

The Iontoquantimeter was not entirely reliable. Careful investigation by a physicist and standardization were necessary before dependence could be placed upon it. It was found that zinc and copper used as filters had the same absorption value. The surface dose varied with the size and density of the portion of the body receiving treatment. Each machine worked most efficiently under certain conditions these are described at some length.

The following conclusions are drawn

1 In interpreting the dose values as used by different investigators not only the voltage the milliamperage the filter and the distance must be known but also the type of machine used if the indirect method of measurements is employed and caution must be used in interpreting the value of an unknown machine.

2 The size of the field of radiation influences not only the depth dose but also the surface dose.

3 If one of the direct methods of measuring is referred to its type and its accuracy must be known. Careful tests of a new instrument as it comes from the manufacturer should be made before it is depended upon for clinical work.

ADOLF H. HARTUNG M D

Desjardins A U The Present Status of Radiation Therapy in Cancer *J La* 1 924 1 3

The radiosensitiveness of tumors is generally greater the less the tendency of the tumor to differentiate and the more marked its tendency to proliferate. On the basis of the relative sensitiveness tumors may be roughly graded as teratomata lymphomata carcinomata or epitheliomata endotheliomata and melanomata.

The effect of radiation on cancer depends largely on the dosage employed. With adequate dosage the cells in the metaphase will show definite degenerative changes in a few days. In cells not in the metaphase a similar but less complete change occurs. In certain cells a still smaller dosage may produce transient or prolonged suspension of metabolic activity and if repeated might gradually reduce the power of the tumor to grow. However repeated sublethal doses tend to increase the resistance of the cells permitting the tumor to recover its original power of growth.

The danger of stimulating tumor cells has been greatly exaggerated. As Loeb has shown such stimulation is temporary and is often followed by retardation of growth.

In the action of radium and the rays on cells there is little difference. The choice of one or the other depends on the size and location of the lesion and which agent is most available. In many cases both can and should be combined. Because of the rapid loss of activity of radium emanation and because the glass capillaries in which it is condensed allow all of the beta rays to pass into the tissues the use of emanation in bare tubes frequently produces decided necrosis. For this reason the present trend in the application of radium is toward restriction of the use of emanation in favor of the more stable radium and toward the employment of higher filtration and smaller units such as platinum or gold needles containing 2.5 or 5 mgm. of radium element.

In many cases surgery and radiotherapy must be combined for the best results. At the Radium Institute in Brussels the surgical technique used in cases of cancer of the rectum is planned so that the use of radium will be rendered more effective.

In cases of cancer of the breast radiation is given chiefly to prevent or delay recurrence. It consists in thorough preliminary roentgenization and two or more postoperative courses of treatment. In inoperable cases arrest of the disease and considerable palliation may often be effected by radiation. For cancer of the uterus with involvement limited to the fundus hysterectomy is still the method of choice. Radium should be reserved for cases in which wide extirpation is impossible or contra-indicated. When the local treatment is surgical thorough roentgenization should be employed from two to four weeks before and shortly after operation. When radium is used it should be supplemented by roentgenization. In cases of carcinoma of the cervix the use of radium as an alternative for surgery should be considered even in the early cases since this type of growth is readily accessible for the placing of radium and peculiarly susceptible to its effect. As the maximal effect of radium is limited to a zone about 1.5 to 2.0 cm. wide its use must be supplemented by radiation with the X-rays from without the pelvis preferably short wave-length X-rays generated at high voltages.

In Hodgkin's disease and lymphosarcoma systematic X-ray treatment is the best method of alleviating the symptoms and bringing about at least temporary restoration of health. The effect of such treatment with regard to the prolongation of life is not known.

#### MISCELLANEOUS

Huer G J The Sun Cure of Surgical Tuberculosis *J C C* 1 J M 9 4 599

The author records his impressions of a visit to three institutions for the treatment of tuberculosis that of Roller in Leysin Switzerland the Treloar Home for Crippled Children in Alton England and

the J. N. Adam Memorial Hospital in Petersburg, N. Y. In all of them the patient is given rest, nourishing food and fresh air, the three fundamental factors in the cure of tuberculosis, and heliotherapy is regarded as a therapeutic aid of first importance. The sun cure founded by Rollier is described. This is of unquestioned benefit and can be successfully carried out in localities in which the climatic conditions are not ideal and the altitude is low. Local and orthopedic measures vary in the different institutions, as compared with general measures particularly heliotherapy, they are of secondary importance. WALTER H. NADLER, M.D.

Bendes, J. H. Heliotherapy in the Treatment of Tuberculosis. *Medicine* 13: 1924, 1: 254.

The technique of heliotherapy as worked out by Rollier in 1903 is fully described. The author adheres to it closely except that he permits a longer period of rest between exposures. The details of treatment are discussed and the local and general effects described. WALTER H. NADLER, M.D.

Clark, W. L., Morgan, J. D. and Anstis, E. J.: Electrothermic Methods in the Treatment of Neoplasm and Other Lesions with Clinical and Histological Observations. *Rad.* 1: 1924, 1: 233.

The authors describe two types of tissue change caused by the application of the high frequency current, namely desiccation and tissue coagulation.

Desiccation or dehydration of the tissues is produced by the Oudin current of high voltage and low amperage while coagulation is brought about by the d'Arsonval current which is just the reverse.

The desiccation current is of value when the lesion is well localized and when a good cosmetic result is important. It is useful for the treatment of a number of benign lesions. Electrocoagulation which is much more destructive is employed for the larger growths. For the active electrode a large needle or wire is used. The usual technique is employed. The insertion of the needle into the growth to the proper depth causes the heat to be carried to the deeper structures as desired and is superior to the use of the actual cautery which has only a superficial penetration.

The electrothermic method destroys only the diseased tissues and unlike radiation does not lower the resistance of the surrounding tissues. Following electrocoagulation there are no fibrous changes in the surrounding tissues. Devitalized tissue is removed by excision or curettage. Large blood vessels entering the field are ligated preliminary to treatment. The indication for electrothermic treatment alone or in conjunction with the use of radium or the X-ray will depend upon the type of growth and the presence or absence of metastasis.

Microscopic examination of carcinomatous tissue exposed to the desiccation current reveals shrinking of the cells and condensation of the nuclei—typical mummification necrosis. Some of the vessels are thrombosed with their walls intact. Coagulation causes a loss of cell outline and fusion of the tissues into a homogeneous mass resembling hyalinization. Examination of laboratory animals subjected to the current reveals a round-cell infiltration in the outlying zones adjacent to the area treated.

The article contains a number of photographs of clinical cases and the tissue changes.

WILLIAM J. PICKETT, M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Butt D C A. Malignant Neoplasms Colloidal and Electrical Phenomena *Med J R* 924 c 196

Tumor cells possess a high potential probably because of the presence of an excess of positive charges or ions. Therefore marked improvement often occurs in cases treated with the electro-negative colloid. The latter probably neutralizes the excess positive ions and readjusts the tumor cells to normal metabolism. SAMUEL KAHN, MD

Wyeth G A. Endotherapy in Neoplastic Diseases *in S g* 944 l 199

Endotherapy, monopolar and bipolar, is the localized production of heat by the resistance of the tissues to the many oscillations of a high frequency current. The sharp pointed active electrode is applied cold. The depth of penetration varies with the amount and duration of the current.

The author believes that endotherapy accomplishes local healing more quickly and surely than X-ray or radium therapy and is preferable to surgery in that it destroys them in ignorance before removing them as a dingy thing of mechanical dissemination.

Endotherapy is most useful for the treatment of accessible malignancies and precancerous lesions. Its action is beneficial also in tuberculosis of the skin and mucous membrane. Old chronic ulcerated syphilitic lesions and condylomata often yield to it quickly. Endotherapy destroys tissue and is just as effective against the squamous cell as against the slowly growing basal cell type of cancer. Because of the great danger of metastasis of the squamous cell type, treatment is not complete until thorough radiation has been given to the lymph draining area. A lesion on the lip is removed in one sitting but the gland of the neck may require repeated radiation. Endotherapy is applicable to lesions of the surface of the body, accessible cavities (such as the nose and mouth) and hollow viscera (such as the bladder that may be collapsed by operation, heated and closed at once. A lesion of the bladder may be removed under direct vision by monopolar endotherapy.

Monopolar endotherapy of desiccation is used by Clarks of Philadelphia in distal treatment of ulcers. High frequency cautery coagulation and coagulation. Fulguration produces hyperemia but does not destroy. High frequency cautery acts like ordinary cautery except that its effect is deeper. Desiccation desiccates by drying the parts; it not sufficient to carbonize but causes rapid dehydration of the tissues and acts as a stimulus to oozing blood.

In the treatment of superficial localized growths monopolar endotherapy with local novocaine anesthesia is used. The current of high voltage and low amperage from an Oudin resonator of a high frequency machine produces just enough heat to dehydrate locally. A sewing needle held in a suitable handle is used. The needle only touches or lightly penetrates the lesion. Practically no scar and only a slight secondary inflammation result. Monopolar endotherapy is especially valuable for lesions about the face, neck and hand, for warts, moles, pigmented naevi, papillomata, keratoses, leukoplakia, venereal catarrh, varicose ulcers, chronic indolent ulcers and keratoses due to the X-ray or radium. Tuberculous cutis, tuberculosis verrucosa cutis and tuberculous ulcer should be destroyed by one treatment of monopolar endotherapy. Disseminated milium, lupus vulgaris and lupus erythematosus which are more diffuse require a number of treatments. A single area is destroyed at a time until the entire lesion is treated. The epidermis is dehydrated and peels off at once at the time of the treatment. Further penetration of heat into the corium and subcutaneous tissue is then produced by lightly touching the tissue with the needle. Shortly afterward there is an outpouring of serum with crust formation.

Bipolar endotherapy for the removal of deep malignancy requires a more powerful current and complete anesthesia. Either is best for the induction of the anesthesia but must be removed from the room while the current is in actual use. The bipolar current is a d'Arsonval current of low voltage and high amperage. Coagulation results. Heat is generated by connecting one pole of the machine to a well wet indifferent electrode under the patient's buttocks. The active electrode is attached to a handle containing a sharp pointed darning needle.

The first step in endotherapy is to describe in the healthy tissue a ring of destruction necrosis around the malignant area. This alleviates pain, shuts off the lymph blood and nerve supply and permits removal of a section for diagnosis without danger of spreading the disease. After the lesion has been completely destroyed it is curetted or cut away with the scissors. The base is seared over with the current to assure further penetration and to obtain a dry wound. There should be no hemorrhage. If a large blood vessel is near the site of operation preliminary ligation is indicated. Secondary hemorrhage seldom occurs. The advantages of endotherapy are quickness and clearness of application, accuracy of dosage, reduction of the dangers of metastasis and the likelihood of recurrence, rapidity of convalescence and a good cosmetic result.

WALTER C BURKET, MD

Black, E. C. Cancer Therapy from the Surgeon's Standpoint. *Am J R* 1924 1

The various phases of cancer therapy from the surgeon's standpoint are discussed under the following heads:

1. The necessity for co-operation between the surgeon and radiologist.

2. Why the deep carcinoma does not yield as readily to radium and roentgen ray treatment as the superficial carcinoma.

3. The transformation of deep tumors into superficial tumors preparatory to roentgen rays.

4. Morphological and biological changes of normal and cancer cells after radiation: (a) stimulation of growth (b) stimulation of cells and (c) necrosis of cells.

5. The theory of the relative radiosensitivity of normal and cancer cells.

Surgery and its therapy today dominate the field of cancer treatment. The surgeon has had the benefit of generations of experience whereas the radiologist has contributions though valuable, are comparatively recent. In percollaboration between the two would undoubtedly tend to render cancer therapy more efficient.

Deep carcinoma does not yield readily to therapy as the superficial chieftly because the overlying structures take part in the penetration of the rays. The essential requirement for a favorable result is the ability to deliver into the cancer a dosage of rays sufficient to destroy the life of every cancer cell without material injury to the adjacent normal body cells. In order to accomplish this all factors entering into the problem of proper dosage must be completely understood. In the delivery of such dosage into the growth in the skin of the radium this result is obtained by even distribution of the radium within the mass.

The surgical removal of the growth of the recurrent deep tumors more amenable to the therapy. This procedure is suitable with the removal of much of the growth as a safe position has been reported by the author in a considerable number of cases with sufficient dosage to give results to make further trial of the method. The history of several of these cases is detailed and the results obtained are reported in detail.

A thorough knowledge of the histological changes produced in the tissues by radiation is not only of scientific interest but of great practical value. If the normal and pathological body tissues vary in their response to radiation, Neoplastic tissues are especially radiosensitive. The author believes the changes induced in the cells by radiation. Not all cancer cells are equally radiosensitive therefore the lethal dose varies within certain limits.

The radiosensitivity of cancer cells is due probably in part to their embryonic character but it is clear there are also other contributory factors. The author advances the theory that as cancer cells are more or

less primitive and rely on services to the organism they are less likely to protect against injury by high energy ionizing rays if they receive less than the minimum dose.

## GENERAL BACTERIAL MYCOTIC AND PROTOZOAN INFECTIONS

Regan, J. C. and R. G. N. C. A Report of Six Cases of Cutaneous Anthrax Treated by the Local and Central Administration of Anti-Anthrax Serum. *Am J M Sc* 1924 111: 253

The local and general dangers of the local treatment of malignant pustule are numerous. The pustule should be left alone and the local measures used to limit the dissemination of the germs.

The curative value of anti-anthrax serum has been regarded as established in many anthrax primarily local infections and in a large percentage of cases has a decided tendency to the main local.

In the local infection a 1/2 oz or 1/4 oz of serum with the capricity of 1/2 oz to 1 cm and a fine needle is used. The needle is inserted into the infected border of the pustule just outside the eschar and injected from 2.5 to 3.5 cm into the subcutaneous tissue with the back of the needle at an angle of 60 to 70 degrees. The serum is injected in the following manner: at two or three points in the serum is so as to enclose the pustule. The injection is usually made in three or four times in two to four hours. In the usual case from four to six injections will be sufficient.

Eighty per cent in the infection of the face and neck but within two or three days the lesion will improve and the patient will be able to return to the site of the infection. Cultures taken from the infected site are almost always negative. The therapeutic results for the use of the serum have been discussed in various papers.

The local injection of the serum is to the general infection in the case of the cutaneous anthrax. The results of the local treatment of the infection are to bring about the relief of the infection and to prevent the development of the infection and to prevent the development of the infection.

The results of the local treatment of the infection are to bring about the relief of the infection and to prevent the development of the infection. The results of the local treatment of the infection are to bring about the relief of the infection and to prevent the development of the infection. The results of the local treatment of the infection are to bring about the relief of the infection and to prevent the development of the infection.

The author reports that the cases of six patients who have recovered have recovered but the history

tonics are not included. A total of fourteen cases have been treated successfully by the author. In addition they saw two cases of the septicaemia on admission to the hospital. Death resulted in one within twenty-four hours and in the other within thirty-six hours. CLAYTON I. A. T. M.D.

Young H. H. and H. H. J. H. The Treatment of Septicaemia and Local Infections by Mercurochrome 220 Soluble and by Gentian Violet J. Am. M. A. 924 1 669

Ten cases—two of septicaemia of p. oneophthi two of bacillus coli infection of the kidney and bladder and one of ascending retroperitoneal infection—were treated by intravenous injections of mercurochrome. In all the results were excellent. In the cases of epistaxis blood became sterile in the case of retroperitoneal infection the inflammatory mass disappeared and in the case of kidney and bladder infections the condition cleared up after one injection.

From this it is evident that mercurochrome is of as much value as an intravenous germicide.

In five cases of staphylococcus infection treated with gentian violet the results were equally good. Gentian violet has apparently a local action on gram positive staphylococci. SAMI. K. T. M.D.

Lions E. E. The Pathology of Foci of Chronic Metastatic Infections. C. d. M. J. 94

Among the most numerous and disturbing of chronic metastatic infections are those of the joints and the eyes. The latter commonly recognized effects of chronic local infection are the types of arthritis, chronic and certain uterine diseases such as erythema multiforme, a furunculosis, nodosum. E. W. L. K. T. M.D.

## DUCTLESS GLANDS

Christie H. A. T. Us and Abuse of Endocrinology. C. d. M. J. 94

Knowledge of the glandular function may be obtained by

1. Constructing a syndrome or profile of the pathological change observed in one of these structures and comparing it with the clinical picture. This method is the most reliable for many means of diagnosis. It has been used for the destruction of the adrenal glands in the treatment of hyperthyroidism and the administration of pituitary hormone in the treatment of diabetes. Langerhan.

2. Noting the effect of an increasing glandular secretion. This method is the most reliable of diabetes with the administration of exogenous insulin to the thyroid.

3. Observing the changes in the glandular removal or destruction of a gland. For example

removal of the thyroid followed by myxomatoma of the thyroid by tetraiodo of the ovaries by the testes by eunuchism.

4. Applying inferentially to man the knowledge obtained from experimentation especially with animal. This may not always be correct. The use of adrenalin in asthma does not prove a lesion of the adrenal.

By such methods certain definite syndromes have been recognized as the result of disturbances of certain glands. The function of the pineal and thymus gland, the placenta and the mammary glands still obscure.

In hyperfunction of gland removal by surgery or destruction by the X-ray are practically the only applicable procedures. These methods have been used only in the treatment of disease of the thyroid and pituitary gland—in the latter with little success.

In hypofunction the field is larger and the treatment is non-surgical. However only the thyroid and pancreas have yielded good results. So far efforts to transplant gland have not been successful.

When the active principles of a greater number of the glands are isolated we may expect better results.

The effects of the administration of ovarian extracts are indefinite. Adrenal extract and some extract of pituitary extract have been used in substitution therapy.

There are very few definite tests for measuring the function of glands. In hypofunction of the thyroid the basal metabolism may be used as a guide to the dosage of thyroid extract. In the treatment of diabetes the amounts of sugar in the urine and blood are accurate indices. For the other glands there are no tests.

With regard to pluriglandular affections our knowledge is still more imperfect and at present the abuse of endocrine therapy is outweighing its benefit. MARCUS H. HOFMANN M.D.

Engelbach W. and McMahon A. Osseous Development in Endocrine Disorders. C. d. M. J. 94

In hypothyroid children between the ages of 1 and 12 years roentgen ray studies of the bones showed absence of the ossification center for the normal age and underdevelopment of the carpal bones. A case of subacute hypoparathyroidism at the age of 6 years showed the development of only 14 years. All metacarpals were present and all epiphyseal lines were closed. Complicated cases of the hypoparathyroidism showed evidence of advanced development of the carpal bones and the ossification center of the long bones. Cases of pituitary thyroid deficiency exhibited a slight delay in the development of these centers. Studies of the hypergonadism at the age of 13 years showed all epiphyseal lines clearly open and the hand much larger than the pituitary hypothyroid hand. The difference in the epiphyseal lines was constantly present in the cases. The increased length of the hypergonadism is due to failure of these lines to close.





# BIBLIOGRAPHY of CURRENT LITERATURE

NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

## SURGERY OF THE HEAD AND NECK

### Head

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## SURGERY OF THE NERVOUS SYSTEM

## Brain and Its Coverings Cranial Nerves

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## Spinal Cord and Its Coverings

- The d gnos of ne pl ms of th p al co d nd th  
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## SURGERY OF THE CHEST

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t m t W A C E LER W A L O TRACY R J  
RANIN and B J WEL L J A M l 94 lx 33  
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the H B S l Tra t t 94 cx 99 [23]

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sch f Geb rth u ( ) l 93 lx 25

- The g r a t t m e n t of u n d t e r a l p u l m o n a r y t u b e r c u  
l o u s I A R C H I B A L D A n J S u r g 1924 x x v i i i 1 [24]  
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A m 1924 1 7  
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1936  
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- F r i c a d o l m y f o r s u p p u a t i e p e r i c a r d i s J W  
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- M i k e d d l a t t n f t h e e s o p h a g u t a r d o p a m  
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A r c h f C y n k 93 306

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A amro d m thod f m i g h e m f m ith  
G I LAKOUE V n Surg 0 4 1 37  
Fascia l ta t a plant f r th e post f rati  
h m a I H s e m T a St r e f M 0 4 6  
Stra gul det ling he T R W m J Am M  
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Doub l gun l h m J C H m a p Bosto M &  
S J 1924 ex 536  
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A SERNAR C nadan M V J 0 4 235  
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x 3 6  
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l l d c h r 0 2 4 x 5 [27]  
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Th lu l S e a m l t s t e c t f o e u t p n t t  
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534  
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0 3 x 39 [27]  
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0 4 x e p t 1  
T l N r a n a m t f t h f m t r t t J R  
K i n d r e l l C o w M J 0 4 3  
C t o t e s t n a l m f e t t l t h o r e l W J  
M a x l e y M n e s o t M l 0 4  
T h e l a t p o s t f t h t e s t u s d t m a h  
l t m e d b t h o n d l l t m t h l a t  
C W l y S c h u M t a f l e p d l 5 4 [29]  
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C A t r a d T l M r i w V n C t M d 0 4  
30  
T h e f l e e t f t h t e w e l t h e r t e n g r t h  
g a t r i c e r t e l d m V l t r d R A  
A m J R o c t l 0 4 7  
S u f f e s n t h e l r o u l e m t h t  
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A J W l t 0 4 4 N A 4  
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x 1  
T h t m n t f h p e t o f h e t l o n e s t n o s E J  
P y n o n T T H e r n l J M B r y d s L a n t  
0 4 x 15 [32]  
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U n a c t i a f u d m f r u g s e p e c t a l 1924 3 7  
S g r a l a n a n d c h e g t r i t C F k  
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l R T W i l s o n T S t l J M 0 4 605  
T h t r e a t m t f i h m g t r e a d d e n l u l c e r b y  
p h y t h p y A l r a 50 A m J C l i n M e d 1924  
l 6  
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d u n t h d i a g n o s l a c u t e p e r f n t p e p t i c l e e t  
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C a r e r h o s p M & S J 0 4 4 [35]  
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t t o m h a n d u n d u m b a s e d 43 x e s H o s  
t S a m m l x a l A b h a n d l d t b d A n d u r y  
t f l w e e h h 0 3 5 [36]  
A h a l k t f k g a t m C J c a s o r g C l  
N A m 0 4 8 [36]  
t t m a t m m p r o d t e c h n T A l l e w  
C l A m 0 2 4 4  
l t e t t e b n W k r r T x a S t l J  
l 0 4 5  
l e s t l l l l e s t u n t t h - f f e t u l  
l g e n l e e a t m e n t - f l f m o r e t e r o r  
m e l f e r L J f r r C l M A s J 19 4

- Chr ni i e tin l st F FERNÁNDEZ MARTINEZ  
Re méd d l Kos n 1924  
Va ality of the symptoms and p thol gy facure  
te t alobstru on M BERRY D R Cl N Am  
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n d a Pr ct 94 i  
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H D M C N S T E R J l p e M e d 194 x i 4



Redial be lith er W S Tract Lr l & Cusan  
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thel fth ch l x l sly an ech oc uscyst of  
th l f Huchler tr 2 ntr l l f Chi 0 3 1  
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l e y 1024 11 10  
Gloset c o n t e u c c a l l s t o n e f e m t  
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C r i n m l l l g l a p e c t f l a r e f t h  
l l e a p p i t W J M A W i s c n n M J 0 24  
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Soc N J e r s y 1024 x 1 93  
C e l a n e c o r y p a c t a N A c n H e d r y B e r  
x 14 0 4 g r e c 340  
T l r e l a n f e l l e c a l p a n c r e t i l M F F a l l o  
B o n M & S J 1024 c 545  
H a m o r h a g e p e r a t t u s u t t e n n d t h o u f t  
p e c o c e r e n e y p e r t r e c o n d r v c h e d  
q u e t m e D i s e a s e l f a s o B l l t m e m S o c  
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C o n t t u r n t o t h e u g r v o f t h p a d n e y l t e  
t l e c u l a s f t h p a c t C B e r r e f A r t l d  
C h i r 10 4 1 350  
T h t m t l f u a e r e t o f a t b e C H a m m e r s t r  
J e n t H t C h i r 0 23 J 258  
P l l l r y J w y s t m a o l i t e p o r e A C T A l l e n  
A g n i a M M t h 1024 1 811  
Q u a n t a u r u p t u r e f t h f l n f l l a c t d  
H S D i r e c t J A m M A u 0 24 1 2 012  
N p a t c y t i f l l g l e r R l C r e l l  
J A m M A 0 24 1 840  
J a h n o c c u f t h e p l e p y D i s s e r a n l  
H a n n B l l t m e m S o c t a t l l a 0 4 c 3  
A n n w t h n l e d g r e n f i n s a y a l b u d h  
n f l l p l t a m C W D r C R a s s B t  
J C h i s D e 1024 45  
A l e c a s e f l a t s d e e L f S u r r I A J  
M A 0 4 17  
L e t f t h l l e s e l t r y s t o f t h l  
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S p e c i a l a u n c h n e l l m l p a i n n r o u  
w r o l l l r e r e J S f a i n r J C L u r r n d  
t h l o c h a S o c M e d l 0 4  
T r e n a u f l l m l g r y t h p a s s g f  
0 4 c o l g t J B D r t A m J t o s t & C o o r  
0 4 709  
A f l a e x p e r t g l l m i n a t m r s f u s u a l  
t y p h g e c e t d i l n d g n l f A  
S e t u S g C l A m 0 4 5  
M e t h o d o f d r l o c f n t h e s b l m l  
n r y t h e r e s u l t H l t r r f l l b a n  
& S h r z l e r e 0 1  
A n n u s f t h p l n e r n b d m a n a l o p  
s n H l l e c A S g 0 4 1 444  
R f t u f t h a b d m l l M D r J A m  
M A 0 4 18 86  
C e t a l d f c y f t h e h a p g m f C C l e r r e  
H H e C o e x A r c h r g 0 4 500  
I e s e f c o g e t d f h r g m a t h m a u t h e  
l o W F J c o B l l t f l G e n H o o y  
B H J A N k 0 4 26

## GYNECOLOGY

## Uteru

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94

I t o d p l a t o f t h t e r u a f t t r t m t  
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T b l a t n a d l t f t h i n t e r p o c n p e r t  
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 the diagn o s i s p g a y A CRAI l l t d S Gold  
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 A m l d g y f i n d n g i p r e g n a y i W a ER  
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 H y p t h l m i m p l t n g p r g n y V S J c x  
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 B i t r a l p y l p h t d c h l c y t t d u n p g  
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 T l p l e t p a e w t h h a e m o s t a l t r  
 t t l d e t c h m t f t h p l c t u g p o n t l y  
 i e c a n d f l e t e d m u l l y t h e t h r C L R z  
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 M A I E U a d A d r r B l l S o c d b t t d g e d e  
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 Th t r a t m t o p l t a p e H C E n s A h  
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 W i l v J M S t e t M A s s 94 vi 64  
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 l e s t r u c t i o n W T CAY A g l M M th 19 4 l 1851  
 A l t r p u u n c a c i d e n t e l l A Y R V C L A Y  
 R e t J R a l l 1924 x l x 73  
 S e n u r g i c a l d i s e a s e s l t h n i g h t k l y W J  
 A n s i t m b r a k a S t M J 1924 l 39  
 T h d g n o u s f r e n a l t l e u n o t W I B R A S S e n s l  
 A J C H O L L J A m M A 1924 l x 688  
 T h e l y f g n o s i s o f r e a l t u l e r c u l o s i s H E R B A N K  
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 S o m e a p e c t s o f t h l g n o s i s f e r l t l e r c u l o s i s  
 F K S M I T H I n l u g h M J 1924 n a x i 125  
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 T h i g e y o f r e n a l t u l e r c u l o s i s J J e r s n d A J  
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 F H A D A M A l t e M J 1924 x 315  
 U r g r y f t h e k i n e y n d u r e t r e l S J e n s l A J  
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 R e 19 4 c 5 p e l 1  
 U r t e a l a l c u l J H N e r r A g r M M th 9 4  
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 x d J M C L A s l e r I l l o M J 9 4 l 5  
 I l p u s l t h l l f x l a n t a e e p o t  
 R R F M O R e K t c k y M J 9 4 00  
 B l d d e d u l c e s f e r l e n r i g n M I  
 C A M B E L L M e d J & R e c 9 4 c x S p p x l  
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## EDITOR'S COMMENT

**A**N extensive review by Drs Blair and Moskowitz of Eitner's work on plastic surgery of the face based upon a number of Eitner's original papers forms an interesting feature of this month's issue of the *INTERNATIONAL ABSTRACT OF SURGERY*. Most American surgeons are familiar with the work of Morestin of Cilies and his associates of Kajanjan Blair and Ivy and of the many other French British and American surgeons who particularly during and after the war did so much to put plastic surgery of the face on a new and high plane of excellence. To workers in this field of surgery who have not been able to follow the simultaneous development of plastic surgery in central Europe Eitner's work will be of special interest.

Two papers of which abstracts appear in this month's number deserve particular attention because they reflect to a high degree the surgical experience and judgment whose possession is rightly considered the most important qualification of the able surgeon. Judd's discussion of the problems encountered in the treatment of diseases of the biliary tract (p 130) emphasizes again the direct relation that exists between the liver the gall bladder and the pancreas and the importance of carefully examining the liver and pancreas in operations directed primarily at pathological conditions of the gall bladder. Bonney's paper on conservatism in gynecological surgery (p 136) stresses the importance of conserving the uterine and ovarian function and the possibility of doing so in the presence of conditions which are too often treated radically.

A number of subjects in the field of genitourinary surgery discussed in this month's issue of the *ABSTRACT* help to make this department of special interest. Humpus paper on genitourinary tuberculosis (p 149) stresses particularly the important points in diagnosis and the necessity of early surgical treatment. Hinman and Morrison contribute an interesting study (p 144) of the circulatory changes in hydronephrosis tuberculosis and polycystic kidney.

The toxemias of pregnancy are discussed from various standpoints in several helpful papers. Harris' study of the after effects of late toxemias of pregnancy (p 138) emphasizes the frequency of permanent impairment of the kidneys

and its bearing upon subsequent pregnancies. Berkeley Dodds and Walker discuss the value of the liver test in relation to the induction of premature labor (p 138).

The treatment of generalized forms of puerperal infection with neo-arsphenamine at the St Antoine Maternity Hospital in Paris is reported by De Saint Blaise and Joanny (p 141). A distinct improvement in the results obtained has been noted during the four years in which the method has been in use.

**A** NUMBER of brief abstracts of papers by McCrae Manges Funk Moore and Lukens continue the symposium begun in last month's issue on foreign bodies in the bronchi and lungs and suppuration in the lungs.

The results of surgical treatment in the presence of diabetes and the management of such cases is discussed by Adams and Wilder of Rochester (p 167) and Muller of Philadelphia (p 168). The improved results obtained in recent years are due both to careful attention to many details of pre-operative and postoperative management and to the use of insulin. In Adam and Wilder's series of cases 43 per cent received insulin.

The essentially malignant character of Hodgkin's disease is emphasized in two papers in this month's issue of the *ABSTRACT*. Gioja's discussion of the pathological and clinical features of tumors of the lymph glands (p 165) emphasizes the differential diagnostic consideration in lymphatic enlargements. Stone's report of the treatment of Hodgkin's disease with the X-ray and radium based upon a study of 200 cases (p 166) presents a very gloomy prognosis for sufferers from this condition.

Two timely papers on fractures and dislocations in the month's issue deserve particular mention. Schlaepfer's report on 157 uncomplicated cases of dislocation of the shoulder (p 161) treated by reduction and immediate mobilization at the Surgical Clinic in Zurich stresses the growing tendency toward prompt resumption of normal activity in the treatment of injuries and diseases of the joints. Eliason and Hinton's report of six cases of complicated fracture of the surgical neck of the humerus (p 162) concerns an important and difficult surgical problem.

# INTERNATIONAL ABSTRACT OF SURGERY

AUGUST 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Grant F C The Treatment of Fractured Skull  
S & Cl V Am 194 95

In the last ten years the tendency has been toward greater conservatism in the treatment of head injuries and decompression has been performed less frequently than formerly.

Grant divides the cases of cranial trauma into three groups (1) those which will be fatal whatever is done (2) those in which spontaneous recovery will result and (3) those in which death will occur if no treatment is given but life may be saved by proper interference.

The injury to the cranial bones is less important than other factors. Fractures of the base of the skull even when small are much more serious than those of the vault because of the proximity of the vital centers in the former.

There are only two indications for surgical interference in cranial trauma the prevention of infection and the relief of increased intracranial tension.

In cases exhibiting signs of increased intracranial pressure and neurological evidence indicating involvement of a particular part of the brain operation should be performed as soon as possible after subsidence of the shock of the injury. Intracranial tension alone does not require immediate intervention. This condition the author believes can be handled more effectively by lumbar puncture the administration of hypertonic solutions by rectum or intravenously and ventricular tap.

Subtemporal decompression is a last resort and is rarely done earlier than forty-eight hours after the injury. The purpose of this operation is to allow the cranial contents to expand outward and thereby relieve the increased pressure.

When a portion of the bone is removed and the dura opened one of two conditions may be found. In one a large amount of cerebrospinal fluid escapes and the subarachnoid space is distended with fluid.

When this membrane is nicked in different areas more fluid is liberated. This is the wet brain.

In the other condition no fluid escapes when the dura is opened the subarachnoid space appears empty the brain surface is congested and the brain is pushed through the opening in the skull some times with great force. In this type of case operation is of little value.

In both conditions dehydration and drainage may be effected from within by lumbar puncture and the use of hypertonic solutions at least as well as by subtemporal decompression and these procedures do not add the strain of operation or leave a defect in the skull.

All scalp wound demand immediate attention to determine the presence or absence of a fracture and for débridement and suture. If no fracture is found on exposure and gentle probing the wound should be cleaned washed out with an antiseptic solution and closed. If a fracture is found it should be undisturbed unless foreign material has been driven in. When foreign material is found in the wound it should be cleaned out the edges of the bone rongueured away to clean bone and the wound sutured around a small drain which should be left in place for twenty four hours.

In cases of depressed fracture the bone should be elevated from within through a small trephine opening. If cerebrospinal fluid is found escaping the opening in the dura should be sought and sutured and the wound treated as in the other cases.

The routine methods of treating cranial cases are described in full. Briefly they are as follows.

1 If the patient is in shock the head is lowered external heat is applied and half an ampoule of pituitrin is given. A solution of 2 oz of magnesium sulphate in 6 oz of water is given rectally and repeated every four hours. Nothing else is done until the systolic pressure rises above 60 mm and the temperature has become normal.

2 X-ray plates and a careful neurological examination are made.

3 If the neurological signs point definitely to a certain area in one hemisphere that region is exposed. Decompression is not done if the neurological signs are vague. The intracranial pressure is reduced by the methods described.

4 If the pressure is found to be more than twice normal it is reduced gradually by spinal puncture. That is two or more punctures are done at eight hour intervals.

5 If in spite of the spinal punctures and the rectal injections the condition becomes worse the pulse failing and the blood pressure rising but not accompanied by increasing stupor or depression of the reflexes 100 c cm of a 15 per cent solution of sodium chloride are given intravenously at the rate of 2 c cm per minute.

6 If the stupor is advancing and the neurological picture is changing for the worse the posterior horn of the lateral ventricle is tapped on one side through Keen's point in addition to the administration of sodium chloride.

The author believes that by these methods much better results have been obtained than by the more hasty and less conservative procedures.

OSCAR S. PROCTOR, M.D.

Eitner, Von L. Plastic Surgery of the Face (Arztw. w. b. V. P. Blau, a. d. M. J. Moskowitz, a. d. c. d. e. p. c. n. j. u. n. a. l. s.)

#### NOSE

Eitner's first attempts in the field of nasal corrections go back to 1903 and were inspired by the communications of Gersuny in reference to paraffin injections and of Joseph regarding his first nasal plastics. In 1913 Eitner published an account of the first ten years of his work. Including saddle nose there were 120 cases of nasal corrections ranging from the correction of slight depressions to that of the most severe luteal types. Various materials were used in the operations but ivory proved to be the best. Subcutaneous operations were undertaken to (1) level humped noses, (2) correct crooked noses and (3) shorten the nose by a wedge shaped excision from the septum. The tip of the nose was set back by means of a straight incision through the septum and its size was diminished by partial excision of the ala. The alar themselves were made smaller by excision of semilunar strips and dog nose and similar malformations were corrected by suture of the alar cartilage. The employment of apparatus was found unnecessary. In addition to typical corrections there is a list of special procedures adapted to particular cases.

According to Eitner the idea of doing cosmetic nasal operations by submucous approach originated with him and was systematically improved by Joseph. The most important of these procedures were (1) removal of a hump, (2) diminution of the size of the nose and (3) total shortening of the nose. The hump was removed with a saw after the soft tissues of the dorsum had been raised through an incision

within each nostril close to the lower border of the triangular cartilage. When the resulting nose was too broad because the bridge was not high and narrow Joseph submucously freed the nasal bones from the nasal process of the maxilla and pressed them toward the midline. To reduce the length of the nose he removed a wedge from the septum and triangular cartilages together with the mucosa and closed the gap with sutures. The base of the wedge was toward the dorsum. This may cause the upper part of the nose to be disproportionately small as compared with the cartilaginous part and in some cases a third operation may be necessary to correct the displeasing dorsal concavity.

Patients who had very marked deformities were not apt to be too particular about the results and for them the Joseph operations were usually entirely satisfactory. However this is not always true in the cases of patients who apply for the correction of slight or fancied deformities.

To avoid the undesirable width of the dorsum and obtain the desired outline Eitner lays a fitted ivory insert subcutaneously along the bridge after thoroughly removing the hump. This was first done by him in 1913 and has always proved a satisfactory procedure.

To remove a hump and at the same time shorten the nose Eitner frees the septum from its attachment to the under surface of the dorsum makes a wedge excision in the septum higher up than in the Joseph operation, frees the dorsum as a wedge shaped mass with its base toward the tip of the nose by obliquely slotting the nasal framework on either side, presses out the hump and after pushing the apex of the wedge up and toward the nasal process of the frontal bone fixes it with sutures in the septum. This work is all done from the inside without disturbing the tissues that support the retained part of the ridge. Resection of the triangular cartilages of the nose may or may not be indicated depending upon the requirements of the particular case. Overcorrection is found necessary in all cases.

Eitner considers the replacement of lost parts of the nose the most difficult of all the problems in plastic surgery. He has never been called upon to replace a whole nose but has successfully restored half of the nose by combining a flap taken from the forehead and a flap from the cheek with its base at the labionasal angle. He has found that ivory forms the best supporting framework for the bridge or tip. Whether ivory or bone is used it must be firmly implanted in the maxillary bone. For replacing lost pieces of the tip and ala Eitner prefers skin cartilage flaps taken from the ear and carried over by means of a pedicle raised from the scalp.

For the correction of the abnormally wide nose Joseph originally removed a strip from the full thickness of the ala on each side but later to avoid the skin scar he confined the removal to the cartilage and mucos. The results of this operation may be improved by fixing a clamp on the tip of the nose and leaving it in place for eight days. Eitner

found this satisfactory in some cases but in others the thickness of the skin prevented the remaining parts of the ala from falling in as desired and the resulting scar in a broad excision caused an objectionable notch in the border of the nostril. To avoid this Eitner makes an incision along the lower border of the nostril from the tip half way to the cheek, and after elevating the skin from the underlying structures incises the alar cartilage and mucous lining upward from the first incision frees the mucosa toward the tip of the nose, reduces the alar cartilage by notching it, removes the excessive mucosa and closes the original incision along the border of the ala with sutures. The form of the nose is then fixed with adhesive plaster which is left in place for eight days.

**Saddle nose.** Paraffin was first employed for the repair of saddle nose but the poor results obtained by the best paraffin technicians prevented Eitner from using it. As a rule cartilage implants are satisfactory but unless most of the perichondrium was preserved the cartilage became absorbed within seven months. The extra operation and the scar resulting from the incision necessary to obtain cartilage or other tissue from the patient are both serious objections. Eitner therefore experimented with many foreign substances. He finally adopted ivory because it is easily molded and easily sterilized; it is not apt to become infected; it causes no reaction and it becomes well fixed in the tissues. He has had the greatest trouble in using it in the syphilitic nose; a successful primary result being obtained in only three of twelve cases; in six the defect was repaired by a second or third operation and in three the final result was a failure. The cases treated unsuccessfully showed lack of septal support and the presence of ozena and secretion which led to infection. Atrophy of the mucosa also probably contributed to unfortunate results in a few cases. The want of septal support can be overcome by inserting very small implants and later at intervals of six or eight weeks substituting larger implants until the desired size is obtained. Occasionally greater fixation can be obtained by placing the tip of the implant in a hole bored into the frontal bone above the nasofrontal suture.

**Lateral deviation.** According to Eitner the oblique nose should not be classified as congenital as it seldom becomes manifest until after the tenth year. It has not yet been determined whether this condition is due to a congenital predisposition or to some trauma or disease of a nasal or neighboring structure. Possibly it is the result of changes in the cartilage or the bone or of both.

For the correction of crooked noses only operative measures should be used. If we accept Bonninghaus theory that the deviation is due to overdevelopment of the septum during the growing years it appears desirable to operate early for the removal of a strip of the septum to effect its liberation.

To correct deviation of the cartilaginous part Diefenbach liberated the latter from the bony

framework through a subcutaneous incision and held it in its proper place with adhesive bandages. Joseph transplanted the maxillary attachment of the septum. Koch and Brandenburg devised methods of dealing with the septum. For the correction of deviation of the bony part Trendelenberg freed the nasal bones by a combined mucous and cutaneous approach. Goodale with a scissors cut through the septum on a line 1 cm. from its attachment to the nasal bones, freed the latter from the maxilla and loosened their attachment to the frontal bones. The whole external framework having been thus mobilized the nose was held in the midline by means of tongs attached to the forehead.

Joseph resected a triangle from the union between the nasal bone and maxillary bone on the wide side and made a linear cut on the other side. He molded the bridge with finger pressure, hammer blows or a rhinoclast and then fixed it in the desired position. Eitner at first followed the more modern operators but later returned to the older plans of Diefenbach and Goodale which he modified so that the entire work is done subcutaneously or submucously. In dealing with the bony part of a simple deviation the nasal bones are freed and the bony bridge brought to the midline. If a lateral deviation is complicated by distortion of the bridge itself the nasal bones are first cut in strips with the scissors and molded and the lateral deviation is corrected later. Eitner employs scissors to cut the bone because in this way it is possible to preserve the perosteum and to avoid annoying callus. Fixation is obtained by the use of tampons. These are removed on the second day and replaced by adhesive straps that are removed in eight days. The patient must be kept under observation for six weeks. If there is a tendency toward recurrence of the displacement it must be corrected at once either by repeated finger pressure or by the use of some apparatus. Eitner uses Joseph's apparatus which is worn for several hours at first every other day and later at longer intervals. When necessary the septum is resected later. Preliminary resection of the septum may cause saddle nose and the performance of the entire correction at one time tends to make the external operation more difficult.

#### EARS

**Prominent ears.** The correction of prominent ears must be operative as the results of conservative methods are not worth the energy spent upon them. Up to 1913 when Eitner made his review the accepted method of reducing prominent ears was to excise from the concha a crescentic piece including cartilage and the skin on the posterior surface. Gersuny reduced the size of the ear by freeing the helix from the skull, cutting out the desired tissue and resuturing the helix.

The result depends not so much upon the type of operation as upon the skill of the operator. Eitner believes that the plan he proposes will give the

inexperienced operator better results than other procedures because it is exact in execution and has the further advantage that it diminishes the size of the ear to a certain degree. The essential steps of his operation are the following:

First the ears are held back against the skull in the position desired and the extreme limit of contact between the skin on the skull and the skin on the back of the ear is outlined. When the ear is again drawn forward the markings will be in the form of an ellipse the vertical diameter being the sulcus between the ear and the skull and the transverse diameter the line of the first incision. The incision is made down to the perichondrium and periosteum and the skin area included within the ellipse is elevated with a blunt dissector. The incision in the perichondrium corresponds to the skin incision but care is taken to avoid cutting the blood vessels. The incision is next carried through the cartilage and the skin is elevated from the anterior surface of the cartilage as high up as its upper attachment and downward in front of the antihelix. If it is desired simply to set the ears back a sickle shaped strip a few millimeters wide is removed from the cartilage the excision extending sufficiently upward and downward to destroy all of the spring that tends to hold the ear away from the skull. If it is desired also to diminish the size of the ear a wider strip is removed. The cartilage and perichondrium are adjusted with catgut and finally the marked-out piece of skin is removed and the edges of the defect are approximated with a few sutures.

*Diminishing the size of the lobe.* Abnormally large and flabby ear lobes though not common may cause their possessors considerable worry. For their correction Joseph recommended the removal of a wedge of the entire thickness of the lobe. This procedure is usually very successful but the scars may be objectionable. In the case of a man whose lobes were broad flabby and more than 30 mm long, Eitner removed a crescentic piece from the posterior surface through almost the full thickness of the lobe and approximated the borders of the defect. The size of the lobe was reduced satisfactorily and the scar was hidden on the posterior surface. In other cases Eitner found that the shape and size of the crescent to be removed may be varied according to the requirements of the individual case.

*Replacement of a missing part.* The difficulties of totally reconstructing the small parts of the ear are so great that heretofore no general plans have been established every operation depending upon the character of the particular case. Eitner reports two cases in which he replaced missing parts.

#### FACIAL PLASTICS

Throughout these papers Eitner advocates the correction of facial deformities for the cosmetic as well as the functional results not only for the benefit of the patient's peace of mind but also for economic reasons. Since the war scars on the face are much more common than before and often cause their

possessor more unhappiness than other deformities that can be hidden. The tediousness and the difficulties involved in their correction and the not infrequent poor results have heretofore discouraged surgeons from undertaking such operations. However with proper planning and patience desirable results may often be obtained. To carry on this work successfully one must possess not only ordinary surgical and technical skill but also the ability to model the form. Though every surgeon doing any considerable amount of plastic surgery has learned or has established certain basic principles almost every case presents special problems demanding solution.

*Restoration of tissue losses.* Lexer opposed the practice of distorting the surrounding structures by drawing together the edges of a defect. Eitner agrees with Lexer insofar as his dictum concerns large defects that would necessitate great undermining collateral incisions or the use of heavy tension sutures and certain cases in which the filling tissue must be of a pattern not easily obtainable in the immediate neighborhood. In other cases he considers the immediate vicinity the ideal source and obtains his material by allowing the wounds to scar then excising a strip from the scar and immediately approximating the edges of the defect. Three weeks later he excises another strip from the scar and approximates the edges. This procedure is continued until the entire defect is closed with one linear scar. The tissues gradually stretch to fill the defect. The method is best adapted to the forehead, cheeks, chin and neck region. When a pedicled flap is required it is taken when possible from the immediately surrounding tissue. As it is desirable that the resulting defect be closed by primary suture it is often better to take two small flaps than one large one. Eitner resorts to transplantation of flaps from distant sources only when the flaps can not be obtained from the surrounding tissue. He enumerates the various sites from which jump flaps can be secured and calls attention to the inconvenience caused the patient by using the hand or arm as a vehicle for carrying such flaps. He has jumped a piece of the ear to the forehead by means of a forehead flap and from the forehead to the nose by means of a brow flap and has transplanted oral mucous membrane first to the outside of the lower lip and then by a skin bridge from the lower lip to the desired position on the upper lip.

In cases of very small bone defects the skin and soft tissues are approximated over the defect. Certain large defects may be filled with ivory plugs before the soft tissues are approximated. Still larger defects involving both bone and soft tissues may require bone plastics or combination skin and bone plastics. Many defects require elevation of the skin surface on account of the loss of the underlying tissue fat muscle or bone. To remedy this loss padding must be chosen according to the position and character of the defect and material to be padded by soft tissue and bone or by bone or hard

tissue For soft tissue Eitner uses de epithelialized skin taken from the immediate vicinity or obtained by free transplantation If the defect is so small that it can be readily filled up with adjacent skin a corresponding strip on either side of the wound margin is deprived of its epidermis and put into it in the process of closing The filling up must be excessive for one must count upon a definite resulting shrinkage If this method is not applicable free transplantation is necessary In the latter procedure the defect is closed and later a piece of skin of corresponding shape is chosen (preferably skin of the back) deprived of its epithelium with a Thiersch knife and excised The excision with it of a layer of fat is of little value as fat undergoes considerable shrinkage If a thicker layer is needed the flap may be doubled with the fat surfaces together and the de epithelialized surfaces above and below The tendency toward healing in these cases is good if the operation is carried out with care for asepsis and the bed is properly prepared The flap must be at least partially in normal tissue and must not be entirely surrounded by scar tissue Besides skin flaps pedunculated muscle flaps may often be considered for padding Formerly Eitner used decalcified bone as a soft tissue support but stopped it because he observed marked absorption of this material For live bone tibial transplants are the best but Eitner often uses ivory implants A depressed scar may be de epithelialized and the surrounding skin and soft tissues approximated over it When a hard tissue implant is used it is better to repair the soft tissues first and make the implantation later

For Thiersch grafting the pieces of epidermis are taken according to the usual technique Pieces as large as possible are moved to their destination and spread out with a knife The surface is then covered with two or three layers of silver foil Upon this dry plaster of Paris is sprinkled and over this a plaster-of Paris bandage is applied The silver foil prevents the adherence of the graft to the plaster and the latter by later breaking up into small pieces gives exit to secretions and absorbs them In this way and by the protection of the plaster bandage the grafts are held in place until they are fixed

Cheek defects if they do not penetrate into the mouth extensively can be closed by drawing the margins together or by closing them in stages with excision of successive scars In some cases the mucosa must be replaced under such circumstances the use of a skin flap seems to be the best method Eitner has obtained good functional and cosmetic results with von Hacker's modification of Israel's method but the scar on the neck from which the skin is taken is objectionable because it is apt to be irritated by the collar At present he employs a strip from the hairy temple region The raw surface is first covered with Thiersch grafts and at the second operation the strip is placed in the wound

*Paraffinoma* Tumor like masses which have been described by Brockart and De Bruck and may

follow the injection of paraffin or vaseline into the tissues are dependent chiefly on the formation of giant cells which crowd in and split up soft paraffin Eitner believes that paraffinomata are more common than is generally supposed and he is not sure that hard paraffin is always immune from the sequelae mentioned Therefore he advises the discontinuance of its use altogether

*Correction of small scars* Single small scars do not cause disfigurement but their multiplication as in smallpox scars may be most objectionable and multiple scars are most difficult to correct Acne and injudicious depilation may produce similar but less pronounced deformities For the removal of pits separated from each other by only thin laminae of scar Unna recommended the use of a polishing stone and for the removal of those more widely diffused he recommends carbon dioxide snow Eitner believes that these scars should be handled by surgical methods—transplantation—since the plans suitable for the care of large scars are in miniature applicable to the smaller scars In addition to the usual instruments Kromyer has used the dental burr Eitner has three ways of handling these scars depending upon their location For a patch of acne scars be smooths and at the same time freshens the surface with a fine dental burr then after cleaning and shaving an area on the thigh he goes lightly over it with a burr without producing bleeding and after collecting the epithelial scales thus produced he deposits and smooths them out on the raw surface where they heal under a crust the patient being kept as quiet as possible In cases of larger flat scars he freshens the area with the burr and covers it with a Krause graft taken from the upper thigh In the treatment of still larger and deeper scars he uses grafts taken from the surrounding areas after applying the burr

*Bolstering up the skin* Eitner reviews the conditions in which it may be necessary to raise up depressed areas in the face and cautions the surgeon against the troubles which may follow injudicious attempts to correct irregularities For padding of the skin without the formation of a visible scar on the face the greater portion of the face can be reached more or less easily through the mouth or from the nasal orifice The cheek region can be approached subcutaneously through the acoustic passage or by means of a perpendicular incision beyond the angle of the mouth For the region of the nasolabial fold the incision is made about 2 cm beyond the angle of the mouth and is extended to the lower edge of the ala of the nose For the region of the lower cheek a low incision is made from the same starting point The chin and the adjoining portion of the neck are reached from the lower fornix of the vestibulum oris The region of the nose up to the glabella is opened by an incision on the inner margin of one or both nares As a padding material Eitner prefers freely transplanted de-epithelialized derma to fat He has had good results from this material Anyone who has struggled with free flap



transplants and has observed the disappointing results which seem to be rather uniform is apt to give this suggestion more than passing consideration. The fact that a full thickness skin graft when properly placed will rapidly take up an adequate blood supply encourages the belief that Eitner's suggestion may be most valuable for the filling out of depressed areas. So far the reviewers' very limited experience with the plan leads them to hope that such will be the case. Their observation of this technique extends over a period of only one year but to date there have been no disappointing results.

## LIP

The greatest variety of accepted plastic methods is found in lip plasties. For the upper lip the best material is a strip taken from along the nasolabial fold by a method similar to that of von Brun. When the adjacent skin is not usable Eitner employs the skin of the neck. For the lower lip Morgan's method is sometimes applicable. In this procedure the skin of the entire chin and under chin is elevated and pushed up but the upper margin must be doubled to produce the natural slope of the lip. The redness of the lips can be produced best by discrete tattoo materials or by means of flaps from the oral mucosa.

Defects in the chin region offer no difficulty unless they are combined with defects of the jaw. If they are not too large they may be drawn together at once. If more material is necessary it is best to obtain it from the submaxillary or neck region.

## SUGGESTION AND HYPNOSIS FOR ANÆSTHESIA IN COSMETIC OPERATIONS

The poor operative results observed during and just before the war which were believed to be due to the poor quality of the drugs obtained at that time led Eitner to take up hypnotism. He found it satisfactory in almost all cases but occasionally it failed. For severe or major operations several preparatory sittings (three to six) were held. At the first the hypnotizer was able to tell whether the final sitting at operation would be satisfactory. For minor operations simple suggestion was used without previous preparation.

Not the least valuable point brought out in the papers is the importance of estimating the patient's mental reaction to the defect under consideration and of predetermining just what the correction is expected to accomplish. Not infrequently patients come with very exaggerated ideas as to what surgery can accomplish and therefore may be disappointed with even very good surgical results. As Eitner points out this is most apt to be true of persons who seek correction of slight or fancied defects but it is true also of many who have very great deformities. In one instance a very good and not noticeable restoration was made for a girl who had lost her whole nose but this has in no way relieved the extreme mental distress.

## EYE

Adler F H The Local Control of the Ocular Circulation *J Clin Ophthalm* 1924 1: 1

By means of an apparatus maintaining a constant intra-ocular pressure Adler demonstrated that stimulation of the cephalad end of the cut cervical sympathetic diminished the rate of formation of the aqueous humor in the cat's eye. The systemic blood pressure was maintained at a constant level but a sudden rise in the former produced an increased formation of anterior chamber fluid. The author considers this fluid a transudate. A momentary apparently increased formation of aqueous humor occurred only if the muscle fibers of Tenon's capsule were intact. An identical result was obtained by the application of gentle pressure to the eyeball.

Therefore in agreement with Starling and Henderson the author concludes that stimulation of the cephalad end of the cervical sympathetic brings about

1 Transient contraction of the muscle fibers of Tenon's capsule.

2 Constriction of the intra-ocular vessels.

There is no evidence of intra-ocular vasodilatation accompanying such stimulation.

A H Fawcett M D

Reese R G An Operation for Blepharoptosis with the Formation of a Fold in the Lid *J Clin Ophthalm* 1924 1: 6

Reese reports twenty-one cases of blepharoptosis with fifteen illustrations of the operative treatment and its results. He gives as indications for the operation described: (1) congenital ptosis due to defective development or entire absence of the levator; (2) acquired ptosis curable in no other way; and (3) ptosis myopathica.

The operation corrects the backward pose of the head by permanently elevating the lid and exposing the pupil. Its cosmetic effect is good also because of the formation of an extensive fold in the skin. It does not cause lagophthalmos during sleep.

Local anesthesia is induced by a 2 per cent novocaine and adrenalin and a Jaeger's horn plate inserted beneath the upper lid. A curvilinear incision is then made through the skin the entire extent of the lid so that the center of the curve is 6 mm from the lid margin and the extremities of the incision are 4 mm from the lid margin. The skin is separated 4 mm above and 2 mm below. A second incision is made beneath the skin down to the tarsus 2 mm below the curve near incision. A third incision is made beneath the upper skin flap to join the extremities of the second incision so that the distance between the second and third incisions is 6 mm. A 10-mm portion of the crescentic area is left intact and the lateral flaps are dissected from the tarsus. The skin and subcutaneous tissue above the crescentic area is elevated from the tarsus and tarso-orbital fascia to form a pocket to receive the crescentic area when the latter is drawn upward.

From above the eyebrows a double-edged knife is thrust downward close to the fascia at 25 degrees first medially and then laterally to emerge at either side of the attached crescentic area. The sutures are passed through two free flaps at the end of the crescentic area and threaded into fenestra in knives. A double needled twisted silk is passed through the upper border of the attached crescentic area 2 mm from the upper border upward to emerge above the crest of the eyebrows and is tied over gauze to produce marked lagophthalmos. The lateral and medial flaps are pulled up through the knife wound above the brow. The excess flap is excised and anchored by means of a suture introduced through the upper edge of the skin, the protruding flap and the lower edge of the skin. No sutures are placed in the curvilinear incision.

Borated vaseline is applied to prevent desiccation of the cornea and is used at each daily dressing. The wound is covered with rubber tissue gauze and a bandage. The sutures remain even days.

After operation there is marked lagophthalmos but this disappears in a few days.

A. H. FEMBER, M.D.

Hyslop G. H. Spasmodic Diplopia. *J Am M A* 1924 122: 1-7

Hyslop reports seven cases of transitory diplopia occurring independently of the use of the eyes and not associated with errors of refraction or muscle insufficiency. In every instance there were symptoms of overactivity of the autonomic portion of the sympathetic nervous system. If all of the symptoms had been found in one person the syndrome would have been that of vagotonia. The spasmodic diplopia is due to a transitory spasm of certain muscles supplied by the oculomotor nerve.

VERIL WESCOTT, M.D.

Ewing A. E. Duct Conservation in Lachrymal Abcess. *Ch Ophth* 1924 1: 3

Ewing attributes unfavorable results from the use of lachrymal probe to a lack of knowledge of the anatomy of the lachrymal duct. He demonstrates the anatomical relations by eight illustrations of natural size decalcified specimens. He objects to the ordinary probes because they are usually too long, too straight and too large. From his observations it is readily seen how a large probe injures the valve of Hasner, how a straight probe causes pain by pressure on the outer nasal wall, and how a long probe causes pain by traumatizing the floor of the nose.

The size of the probe selected in any given case depends upon the ease with which it will pass through the canaliculus. Usually a probe which is 1 or 1.2 mm in diameter will pass without force. On this basis probes should be constructed with a gradation in size of 0.2 mm, the 1 mm size being used as the standard. In order that they may not injure the floor of the nose their length from the finger plate should not exceed 45 mm.

For dilating the upper canaliculus should be chosen as it is shorter and the arc of the curve entering the bony duct is only one half the arc that must be traversed when the lower canaliculus is chosen. Thorough anesthesia should be induced with cocaine and holocaine before the punctum is divided or dilated. If incision is resorted to it should never be over 3 mm long. It is best made with a curved Weber knife directed backward to conceal the incision beneath the lid margin. The sac the nasal end of the duct and the duct should next be anesthetized with 5 per cent cocaine solution.

In its manipulation the probe should be introduced horizontally until the nasal wall is reached. The finger end should then be raised to a vertical position and the probe end guided into the duct by pressing the forefinger over the sac. Syringing immediately after the passing of the probe is contra-indicated on account of the possibility of extravasation. Therefore Ewing does not make use of the syringe until after from twenty-four to forty-eight hours.

The use of probes is often discouraging because no immediate result is obtained. A second probing should be done in from six to eight weeks as time should be given for the chronic swelling to subside and new epithelium to be formed. Drainage will be established by any small opening made. By careful persistent treatment this result may be obtained in every case except those with displacement due to injury and those with malignancy.

A. H. FEMBER, M.D.

Cottle M. H. Postoperative Adhesions of the Vitreous to the Cornea. *Am J Ophth* 1924 3: 263

The author reports four cases of adhesion of vitreous strands to the corneal wound following the discission operation with knife needles for secondary cataract. The slit lamp permits easy and early recognition and observation of these synechiae. They originate in the vitreous itself—not from the secondary membrane. Their structure varies in texture and strength. Depending upon the structure and the direction of the fibers, irregularities of the pupil occur. The synechiae do not tend to disappear spontaneously.

The occurrence of this complication probably depends on the composition of the vitreous or the operative technique used or both. It is possible that the delicate fibers of the ligamentum hyaloideocapsulare are pulled into the wound and undergo a change due to a low grade inflammatory reaction or a chemical change which causes them to become coarse and tough. In all of the cases the incision was made at an appreciable distance from the limbus. The shape of the knife, the depth to which the knife is plunged in the vitreous and the method of its withdrawal may be other factors.

The synechia may cause complications such as secondary glaucoma, late infection and prolapse of the vitreous.

MANFRED R. WALTZ, M.D.

Wagener H P: Retinitis and Renal Function in Cardiovascular Renal Disease *Am J Ophth* 1924 38 31 272

Eighty cases of retinitis occurring in patients with hypertension were classified according to ophthalmoscopic appearances into four groups (1) retinal arteriosclerosis of hypertensive type with hemorrhages (2) arteriosclerotic retinitis (3) retinitis of hypertension plus nephritis and (4) retinitis of nephritis. The cryostat sections prepared by several ophthalmologists were used as the basis of this division. Laboratory and clinical studies of the patients showed definite differences in the functional capacity of the kidneys in the various groups.

In the twenty-eight cases of retinal arteriosclerosis with hemorrhage renal function was definitely impaired in 5 per cent while in 22 per cent there was moderate reduction of phenolphthalein excretion. In the twelve cases of arteriosclerotic retinitis renal function was definitely reduced in 20 per cent but there was elevation of blood urea in only 12 per cent. In 60 per cent more there was moderate reduction of phenolphthalein excretion. In the twenty-three cases of retinitis of the hypertension plus nephritis type renal function was definitely impaired in 17 per cent while there was marked reduction in the ability to excrete phenolphthalein in an additional 9 per cent. In the seventeen cases of retinitis of the nephritic type renal function was definitely reduced and there was considerable retention of blood urea in 50 per cent in 33 per cent more the phenolphthalein excretion was moderately reduced.

In the group of eighty cases there were five which were definitely diagnosed as chronic glomerulonephritis. Ten of these patients had retinitis of the nephritic type, one a retinitis of the hypertension plus nephritis type and one only retinal hemorrhages in association with retinal arteriosclerosis.

There is it would appear that although phenolphthalein excretion is definitely impaired in most persons with arteriosclerotic retinitis marked reduction in renal function may be expected in an appreciable percentage of the cases only in retinitis of the nephritic type. It is doubtful whether retention of nitrogenous waste products in the blood is connected in the production of any of these types of retinitis as in so-called retinitis of nephritis is seen in patients with malignant hypertension and function adequately kidneys.

Witte I E: The Treatment of Optic Nerve Inflammation Determined by Optic Canal Radiography *J Laryngol* 1924 44 35

Following an anatomical study of the optic canals in which they were found to vary in size from 4 to 6.5 mm. and in shape from the usually circular to the oval the author made other investigations to determine whether or not such variations would explain why certain nerves become involved and others escape.

Thirty-six cases of optic nerve disturbance and twenty-five normal cases were studied.

The optic canal is normally circular and approximately 5.5 mm. in diameter but may vary from 4.5 to 6.5 mm. Its size and shape can be determined by careful roentgenography. When a severe neuritis occurs in canals abnormally small there is great danger of permanent impairment of vision whereas the same impairment of vision in cases of normal canals is apt to be followed by spontaneous recovery. Neuritis in normal or abnormally normal canals seems to be of extracanal origin. JAMES C. BRASWELL, M.D.

## EAR

Little H J: Suppurative Labyrinthitis *S J Clin* 1924 10 41 53

Experience with labyrinth disease has shown that by far the most important factor in the successful management of this condition is the correct diagnosis. It is known that destruction of the function of the labyrinth by disease processes may be followed by recovery without operative interference and without further labyrinthine symptoms. In daily practice cases of non-functioning labyrinths may be encountered in which there are no signs or symptoms of active labyrinth disease. In such instances interference does not seem warranted as natural processes have accomplished the desired result.

The author reports four cases representing certain types of labyrinth disease. Case 1, toxic or metastatic labyrinthitis. Case 2, circumscribed suppurative labyrinthitis followed by diffuse suppurative labyrinthitis. Case 3, chronic suppurative otitis media and mastoiditis with acute suppurative labyrinthitis, facial paralysis and meningitis. Case 4, suppurative and chronic otitis media with mastoiditis, diffuse suppurative labyrinthitis and cerebellar abscess.

Aspeitzky S J and Almour R: Observation on the Diagnostic Value of the Cold Caloric and the Rotation Tests *Laryngol* 1924 44 43

Labyrinth tests are of value to determine the amount of function present in the end-organ. Such tests make it possible to diagnose the various diseases of the labyrinth with some degree of certainty and serve as guides in determining the time and mode of operation on the end-organ in suppurative conditions.

The tests have a definite place in neurology but their value is limited because of the lack of histological evidence to verify and clarify clinical observations.

Kopetzky and Almour corroborate the findings of Portner with regard to paradoxical reactions. They believe also that caloric nystagmus and rotary nystagmus are different in character and origin.

There is apparently a direct relationship between the duration of the after nystagmus elicited by rota-

tion and the time required to produce a nystagmus by the caloric method

Syphilitic involvement of the central nervous system causes faulty past pointing after labyrinth stimulation despite the absence of spontaneous signs of asynergia or dysmetria

In the authors opinion no definite conclusions can be drawn from induced past pointing when the spontaneous pointing is normal

JAMES C BRASWELL, M D

Kettlekamp F O Mucosis Otitis *La J g 24 p 1924 22 v 44*

Mucosis otitis is a disease which is insidious in its onset difficult to diagnose and treacherous in its course. It was first recognized by Gohn. This report by Kettlekamp goes into considerable detail regarding the etiology, pathology and bacteriology of the condition. Three cases are reported. The important points in the article are summarized as follows:

1 Clinically two types of acute otitis media are distinguished: the common type and the so-called mucosis otitis

2 The so-called mucosis otitis may be caused by the streptococcus mucosus capsulatus or the diplococcus lanceolatus capsulatus

3 Capsulated bacteria cause symptomless destruction of bone and symptomless intracranial complications

4 Mucosis otitis presents a characteristic clinical picture

5 The presence of the streptococcus mucosus capsulatus in the spinal fluid is pathognomonic of otogenic intracranial complications

ANSEL M R HILL, D D

Leitch J W A Case of Acute Bilateral Otitis Media Associated with a Large Abscess of the Right Frontal Lobe *J La 51 v 1924 21 209*

Leitch's patient was a boy aged 7 years. The unusual features of the condition were rapid onset and severity of the initial symptoms followed by a decided slowing of the pulse and remission of the symptoms for a time.

There were absolutely no signs or reflex changes during life to indicate the localization of the condition. The localization was discovered only at post mortem examination about six weeks after the onset of the acute symptoms.

FRANK P SCHWARTZ, M D

## NOSE AND SINUSES

Verge C F Traumatic Abscess of the Nasal Septum in Children: with a Report of Five Cases *Ill J 94 1 195*

Conditions presenting a picture somewhat similar to that of traumatic abscess of the nasal septum are:

- (1) syphilitic gumma of the septum
- (2) polypus
- (3) hypertrophy of the inferior turbinate and (4)

thickening of the deflected nasal septum with soft hypertrophy of the mucosa

The prognosis of traumatic abscess of the nasal septum depends upon the promptness of treatment. The latter should consist in measures to obtain adequate drainage of the abscess to combat symptoms of infection and to prevent deformity.

To prevent deformity early replacement of the separated mucoperichondrium to the cartilage is essential. Therefore drainage should be dispensed with as early as possible. To aid in the approximation of the flaps the author prefers the largest rubber drainage tube that can be employed in the nostrils and the use of gauze packing as indicated. The tube and gauze splint are left in place for one week and then replaced if this is desirable by an ordinary perforated hollow hard rubber splint which is used for three weeks.

Verge draws the following conclusions:

1 Traumatic abscess of the nasal septum is relatively rare considering the frequency of nasal trauma in children

2 It occurs as a rule in early childhood and is the result of slight trauma. On account of the insignificance of the trauma many of the cases are not recognized

3 Unrecognized or neglected cases result in unsightly nasal deformity

4 In every case of injury to the nose in children a careful examination should be made for evidences of a septal hematoma or abscess

OTTO M ROTT, M D

Lewis F O The Radical Frontal Sinus Operation with the Results in Sixty Five Cases *Tx J 93 1924 1 229*

After tracing the development of the external frontal sinus operation as performed today Lewis describes a few modifications he uses in the performance of the Killian operation and a new operation devised by Howarth of Edinburgh which he performed in his last four cases. In conclusion he reviews the results in sixty five cases of frontal sinus suppuration operated upon radically.

The modified Killian technique consists in the following steps:

1 The eyelids are sutured together to protect the eye from injury

2 The skin and deeper structures are infiltrated with 1 per cent novocaine and a 1 to 1000 adrenal solution even when general anesthesia is used. This is done to reduce the hemorrhage.

3 Coakley's incisions are made. The first or upper incision is made through the upper margin of the eyebrow and extended through the periosteum to the bone. The lower incision is begun posteriorly to the supra-orbital notch and carried in a curved direction downward alongside the nose midway between the inner canthus of the eye and the dorsum of the nose to the inferior border of the nasal bone. This prevents puckering at the inner canthus of the eye.

4 In extremely large sinuses the septa the overhang is removed from the upper margin and the septa are partially excised and examined for acute sore cells.

The steps in Howarth's technique are the following:

1 A curved incision is made just under the supra-orbital margin and brought down in front of the inner canthus onto the side of the nose.

2 An incision is carried down the bone and the periosteum covering the roof of the inner wall of the orbit is raised; the pulley of the superior oblique being thus detached from its notch and all of the orbital contents and the lacrimal duct are left intact.

3 The sinus is opened just above the lacrimal groove and with a Citelli forceps the sinus floor is removed with minimal disturbance of the mucosa.

4 The floor in front of the nasofrontal duct is removed with Citelli forceps.

5 The ethmoid is entered through the lacrimal groove and the cells are removed. A new anastomotic duct is formed further forward than the old one and a suture and forceps being used in removing the swollen mucosa of the superior maxilla and of the nasal process of the frontal bone.

6 A large firm wall of rubber tube is pushed up the nose into the anterior part of the sinus and the lower end is stitched to the ala of the nose.

7 The orbital contents are allowed to fall back into place and the incision is closed.

8 The tube is removed after ten days.

(OTTO M. KERR, M.D.)

Ruclin, S. L. S. Puncture of the Inferior Maxillary Sinus. *Lancet*, 1912, 2, 19.

The author makes his puncture in the inferior maxilla and as the most desirable site for puncture selects the process maxillaris of the inferior maxilla.

The needle used is a thin needle curved toward its tip with a sharp point and with a mark 4 cm from its tip indicating the average distance between the anterior nasal spine and the site of selection for the puncture. The handle is a modification of that of Pein's needle.

(W. B. ST. CLAIR, M.D.)

## PHARYNX

Higelow, N. A Type of Enucleated Tumor of the Tongue and Its Content from the Middle and Pharynx. *Dental and Medical Journal*, 1912, 4, 23.

During tonsillectomy as it is usually performed, the blood vessels and the lymphatic glands are exposed from the tonsil into the mouth and pharynx. The swallowing or inhaling of this septic material must be prevented for this purpose the author has invented a suction apparatus which may be attached to the tonsil instrument.

The basic principle is a cup attachable to a suction apparatus and a cutting member that slides across

the mouth of the cup. The attachment has been used with success on the Sluder Beck and Sluder instruments.

In some respects the modification is ideal but it is doubtful whether negative pressure will ever prove as safe as the many others. Unless care is exercised in controlling the suction in the use of the Sluder method there is danger of removing a part of one or both pillars. In the use of the Beck instrument such accidents do not occur.

(J. MRS. C. BRASWELL, M.D.)

Müller, A. J. A Modification of an Old But Safe Instrument for the Complete Enucleation of the Tongue. *Lancet*, 1912, 2, 56.

In the author's opinion the old Beck-Schenck or Beck-Mueller instrument is the safest for beginners. In competent hands the Sluder instrument is safe but the most competent operator meets with accidents if he employs this instrument untidily.

Müller describes a new instrument for the enucleation of the tongue which is modeled in general after the Beck-Schenck apparatus but unlike the latter has the advantage of a Sluder handle and trigger arrangement for pulling up on the wire loop. It has also the advantage of easy manipulation. The handle is removable and adjustable. It is a safe instrument for the beginner. The operative technique is similar to that of the Beck-Schenck method.

(JAMES C. BRASWELL, M.D.)

Sargis, N. Malignant Neoplasm of the Pharynx and Larynx. Surgery, Radium and Roentgen Treatment. *New England Medical Journal*, 1912, 1, 1187-1191.

Of the author's cases of malignancy of the larynx and pharynx only one was cured after a period of three years. This was a retro-cricoid adenoid epithelioma in which by means of laryngofissure, radium was applied to the interior of the tumor for twenty-four hours.

The prognosis in cases of intrinsic laryngeal cancer is grave. Not one of the author's cases has been cured; the majority are benefited temporarily but the condition recurs. Recently in cases treated with deep roentgen therapy there has been more marked improvement.

In intrinsic cancer of the larynx the prognosis is very much better when the lesion has spread and especially when it involves the posterior larynx. Great wall the author performs laryngofissure and treats with radium and the results are these: these are the cases in which more radical operations perform a laryngectomy.

With regard to the treatment of the localized forms especially ecchymosis of the vocal cords there is little difference of opinion; the majority of surgeons advocate laryngectomy with excision of the disease. Others do not use adjuvant after the operation, preferring roentgen therapy alone. The author urges laryngofissure with wide resection.

of the cord followed by the application of radium and then of the X rays at first to the open wound and then through the skin. In none of his cases in which this was done has there been a recurrence—not even in those in which it was necessary to resect both cords.

Berard and Sargnon treat cases of malignancy of the lower part of the pharynx by the internal and external application of radium or very deep roentgen therapy or a combination of the two. Cases of pharyngolaryngeal extrinsic cancers they treat by tracheotomy and the internal and external application of deep roentgen therapy. In the glands which appear to offer greater resistance to deep roentgen therapy than to radium, radium is applied externally with the use of thick filters. In cases of extensive intrinsic cancers of the larynx a tracheotomy is done and followed by radium and very deep roentgen treatment. In localized types a laryngofissure is followed by X ray treatment. When radium is employed a small dose is left *in situ* for a considerable length of time. W A BRENNAN

Collect Biological Methods of Treating Sarcoma of the Upper Respiratory Tract (L. méthode biologique des tumeurs de la cavité nasale et de la cavité buccale). *Arch. Hyg. Exp. Méd.* 1923, 25, 99.

The usual biological methods of treating cancer which are based on the blastomycetic nature of the neoplasm occasionally result in improvement but rarely have effected complete and definite destruction of the neoplasm. They are therefore inferior to surgery. The Citelli method has been applied heretofore exclusively to sarcoma. This procedure is based upon the principle of autogenous vaccination. In order to provoke in the organism the specific substances which will combat the neoplasm the patient is given injections of tumor substance which presumably contains the causal agent of the disease. After its removal from the tumor the tissue to be used is washed in a 1 per cent solution of phenol and washed from three to five times. It is then divided into small fragments mixed with glass powder and a sterile phenol solution (5 to 8 c.c. per gram of tumor) is crushed in a mortar. Before an intravenous injection is given the solution is filtered through gauze cotton and filter paper.

In the first injection from 2 to 3 gm. of tumor are given in the second from 4 to 5 gm. and in the third from 6 to 7 gm. In all from 10 to 12 gm. or more may be used.

Following the injections Citelli noted necrosis in sarcoma and more recently in endothelioma and carcinomata. At first this is superficial but later becomes deep blocks of neoplasm being spontaneously eliminated. Microscopic examination shows the neoplastic cells in the process of cytolysis. Citelli reports the following cases treated by the Citelli method.

CASE 1. Myxosarcoma of the left nasal fossa. Recovery maintained for six months.

CASE 2. Angiomatous myxosarcoma of the right nasal fossa. Recovery maintained for a year.

CASE 3. Lympho-angio-endothelioma of the neck and parotid with glandular metastases. Decrease in the size of the tumor and arrest of proliferation.

CASE 4. Small round cell sarcoma of the left nasal fossa with propagation. The patient's condition is good but there has been no decrease in the size of the tumor.

Citelli states that the majority of recoveries reported occur in cases of sarcoma or mixed tumors of the upper respiratory tract. In some instances it is still too early to conclude that the cure is permanent. Citelli has recently cured two cases of endothelioma and two cases of carcinoma.

W A BRENNAN

## NECK

On the R. M. Iodine Deficiency and the Prevalence of Simple Goiter in Michigan. Preliminary Report. *J. Am. M. A.* 1924, 15, 1135.

That the state of Michigan has an abnormally high percentage of cases of goiter has been a matter of common knowledge for years but of no great concern either to the public or to the medical profession. It was not until 1918 that the matter was given serious consideration. An extensive survey has shown that in the northern parts of Michigan the incidence of goiter in children is much higher than in the southern part of the state and that this is due to the fact that the amount of iodine in the water in the northern areas is less. With regard to the age incidence of the condition it was found that in boys goiter is most frequent at the tenth year and in girls at the age of 12. This would seem to indicate that congenital cases run approximately even up to the age of 10 years. With regard to the relation of the condition to scholastic standing it was found that among both boys and girls there is a definite increase in the incidence in children below scholastic grade.

The most satisfactory method of preventing goiter is the administration to all school children of 10 mgm. of iodine in the form of iodostarine in a chocolate tablet once a week for forty weeks. A more simple method of supplying the deficiency is to give the iodine in the table salt.

ARTHUR L. SHREFFLER, M.D.

Selt, C. Report of the Goiter Commission of the Munch Pediatric Society. *B. ht. de Kr. pf. k. mm. n. d. M. e. chene. G. eltschaft. fu. r. K. n. de. h. (kunde).* *M. h. n. med. W. h. sch.* 1923, 1, 1406.

The Munich Pediatric Society appointed a commission to study the goiter problem as it affects children and adolescents. This commission in conjunction with the Ministry of the Interior sent to the state physicians seven questions covering the most important symptoms, the cause of the condition and the treatment.

From the answers received Seitz draws the following conclusions:

Among children with goiter there are many in whom increased circumference of the neck is not associated with general disturbance but is a sign of growth or maturity. In such cases iodotherapy is not necessary.

In the districts of Bavaria in which endemic goiter is found it is a trial to recommend prophylaxis with iodized sodium chloride and instruction of the public by means of leaflets.

With the consent of the parents organic or inorganic preparations of iodine in minute doses might be given to school children. This should be done according to the method used in Switzerland.

CSEITE (2)

*Amerbach: Incisions to the Recurrent Laryngeal Nerve in Thyroidectomy (Ueber Recurrentschneidungen des Kehlkopfnerve). Ztschr. f. Hals-, Nasen- und Ohrenheilk. 1923, 1: 447.*

Disturbances of the motility of the vocal cords caused by benign goiter are extremely rare. In 23 cases of benign goiter their incidence was less than 0.4 per cent.

The number of injuries to the recurrent laryngeal nerve is much greater than is generally supposed and the relationship of such injuries to the different methods of operating for goiter has not been determined.

This article deals chiefly with the difficult problem of determining the presence of paralysis of the vocal cords. The author discusses the sources of error in this determination in detail. There is certainly a protrusion beyond the midline in spite of the fact that this has been doubted. A correct interpretation of the position of the arytenoid cartilage and of the tension of the vocal cords is of great importance.

The author emphasizes the necessity for a careful laryngological examination before and after operation. Proper interpretation of the findings requires training in laryngology.

KULLENKAMPFF (2)

*Festeroff, G.: The Use of the Galvanocautery in the Treatment of Tuberculosis of the Larynx. La Presse Méd. 1924, 2: 2 v. 590.*

The technique of galvanopuncture is simple; the only requisite being a moderate amount of dexterity in intralaryngeal manipulation. The work may be done by direct or indirect laryngoscopy. The latter is usually least distressing to the patient.

The use of the galvanocautery favors the arrest of tuberculous processes by producing vascularization and fibrosis. The method is applicable to all types of lesions and by means of its penetration to the full depth of the diseased area is possible at once. The action is very quick and the reaction is harmless and negligible.

In the author's opinion the galvanocautery is the only therapeutic agent which has proved of true and constant value in the surgical treatment of laryngeal tuberculosis. It gives relief and effects a cure in all types of lesions and in many otherwise incurable cases.

JAMES C. BRUSWELL, M.D.

*Turner, A. I.: Metastatic Malignant Tumor of the Larynx Secondary to Adenocarcinoma of the Right Kidney. J. Laryngol. & Otol. 1924, 23: 151.*

The case reported was that of a 60-year-old man with metastases in the suprarenal gland, the lungs and the thyroid from a primary growth in the right kidney.

A detailed report of the postmortem findings in these organs is given and supplemented by six figures demonstrating the gross and microscopic pathology.

FRANKLIN P. SCHUSTER, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Adson A W Pseudo Brain Abscess S & Cl  
Am 1924 14 503

The author reviewed three cases in which the history was definitely that of brain abscess. In two exploration revealed only a localized encephalitis. In the third the treatment was expectant. All of the patients recovered. All had a history of otitis media and mastoid involvement followed by acute encephalitis with cerebral symptoms which later cleared up revealing signs of localized cerebral involvement. All ran a similar course of symptoms with a septic temperature and a leucocytosis typical of the tertiary stage which gradually subsided into the quiescent stage with spontaneous recovery.

The first patient was a girl of 14 years who one month prior to admission to the hospital developed otitis media on the right side after an attack of measles. This was followed by a right temporal headache. Examination revealed a right acute suppurative otitis media with a cloudy right antrum a leucocytosis and a septic temperature. Paracentesis of the right ear was performed but did not give complete relief. Exploration of the mastoid revealed infected granulation tissue with some destruction of cells there was no evidence of sinus thrombosis. After the operation the condition improved somewhat but the right temporal headache and leucocytosis continued and there was choking of the disks of from 3 to 4 diopters with hemorrhage and facial paralysis on the left side. One month after the patient's admission to the hospital the facial paralysis and choking of the disks were increasing and a right temporoparietal lobe abscess was feared. Exploration revealed an accumulation of fluid in the subarachnoid spaces and congestion of the convolutions on the surface the only findings being those of a localized encephalitis. The exploring trocar encountered a deep mass but no pus bloody cerebrospinal fluid was obtained from the ventricles but a culture of this was negative. A ventriculogram showed a poorly filled right anterior horn. The postoperative course was uneventful and the patient was dismissed on the tenth day. She has apparently recovered completely.

The second patient also a girl of 14 years had symptoms similar to those of the first. Her condition began with atypical scarlatina which developed into streptococcal sore throat bilateral otitis media and later suppurative cervical adenitis. After a month there was marked improvement for three weeks but this was followed by signs of cerebral disturbance (irritability dizziness right homony-

mous hemianopsia swelling of the left optic disk right hemiplegia and partial motor aphasia).

Examination revealed chronic suppurative otitis media on the right side, edema of the left middle ear, right hemiplegia a leucocytosis and a daily increase in the temperature. Nine days after the patient's admission to the hospital and nine weeks after the onset of the illness a left temporal lobe exploration was performed because of persistence of the cerebral symptoms. The findings were practically the same as in Case 1. A culture of the cerebrospinal fluid from the ventricles was negative. The postoperative course was uneventful. When the patient was discharged on the twenty seventh day she still had some eye trouble and a partial right hemiplegia. Five months after the operation her condition was practically normal and she was able to carry on her school work. During the previous five months she had three convulsions two with a slight residue and the last one with none.

The third patient a girl of 13 years had had left otitis media for seven years and three operations in the mastoid region. A month before she registered at the Mayo Clinic streptococcal sore throat developed with involvement of the glands and a supra orbital headache on the left side. At this time there was slight aphasia and the right pupil was larger than the left. With a septic temperature there was a leucocytosis of 16,000.

The left mastoid area was again explored but only granulation tissue was found. The patient was kept under observation for two weeks and finally dismissed. Aside from a questionable convulsion followed by slight weakness of the right hand and the persistence of the leucocytosis her convalescence was uneventful. As there was no other evidence of cerebral involvement no further operation was performed. The patient has remained well for two years.

After a review of the typical history and the clinical and surgical findings in cases of brain abscess the author concludes with the statement that physicians must be on the lookout for these cases of pseudo brain abscess which so closely simulate the typical abscess.

Kaestner H Experiences with Puncture of the Corpus Callosum at the Leipzig Surgical Clinic  
(E fahrung a mit dem Bikenstich in der Leipziger chirurgischen Klinik) Dtsche Zeitsch f  
Nerv heilk 933 1891 3

The author reviews 120 cases in which puncture of the corpus callosum was done in the treatment of congenital or acquired hydrocephalus brain tumor epilepsy or idocy.



In a considerable number of the cases of hydrocephalus tumor of the cerebral hemispheres and non localizable tumors a distinct decrease in the symptoms of pressure was noted. On the other hand in cases of tumors of the cerebellum and the region of the third ventricle the procedure had an unfavorable effect in these cases puncture of the corpus callosum is contra indicated because of the changes in the circulation caused by the growths. In a large percentage of the cases of epilepsy a fairly good result and in some cases continuous improvement was noted. Idiocy remained unaffected.

The dangers associated with puncture of the corpus callosum are not great and in no way greater than those of ventricular puncture. When the correct technique is used hemorrhages of the veins of the dura need not be feared.

LEMKE (Z)

### PERIPHERAL NERVES

Boorstein S W. Obstetrical Brachial Paralysis (Erb's Palsy). *J Am Med Ass* 941: 21862.

Taylor's traction theory of the causation of obstetrical brachial paralysis has been generally accepted. The brachial plexus is occasionally injured by the forceps but more often by a finger during improperly executed traction on the delivery of the after coming head. Occasionally in cases of vertex and breech presentations cervical nerve fibers are injured by compression between the clavicle and underlying bone structures and probably less often are lacerated by excessive traction as in delivery of the posterior shoulder when it is caught on the perineum.

The upper arm type of paralysis is the result of a lesion of the suprascapular nerve and of the fifth and sixth cervical nerves just beyond their union. Less frequently the entire plexus is injured thus causing paralysis of the whole arm. When the eighth cervical and first dorsal nerves are involved paralysis of the lower arm results.

As a child with the upper arm type of paralysis is older the arm characteristically becomes abducted and rotated internally with the elbow slightly flexed, the forearm pronated and the palm looking backward in the typical policeman's tip position. The child cannot abduct or raise the arm at the shoulder because of the paralysis of the deltoid and supraspinatus. Internal and external rotation of the arm, flexion of the elbow and supination of the forearm are lost.

In the whole arm type of paralysis there are in addition to the findings mentioned wrist drop, paralysis of the flexors and extensors of the wrist and fingers and greater atrophy than in the upper arm type.

In the upper arm type partial recovery is the rule. In the lower arm type the shoulder muscles may recover somewhat but the lower arm muscles do not. In the former sensation is normal and in the latter it is lost. Atrophy of the humerus and scapula is usual.

Early complications are facial paralysis, fracture of the clavicle and separation of the epiphyses of the head of the humerus. Late complications are secondary posterior subluxation of the humerus due to traction of the unparalyzed pectoralis major, subscapularis and teres major, hooking of the acromion and pronation of the forearm.

An important sign in the diagnosis is inequality of the pupils which indicates injury to the inner cord of the brachial plexus on the inner side.

To prevent this condition special care is necessary in the application of the forceps and the management of the shoulders. In the Mauriceau-Smellie maneuver the index and middle fingers should be forced above the shoulders, not on the sides of the neck but on the sternum of the infant.

In conservative early treatment the shoulder should be immediately put in a splint or brace to prevent stretching of the paralyzed muscles and contracture of the unopposed muscles. Such a brace should place the shoulder in abduction and outward rotation, the forearm in supination, the elbow in flexion and the wrist in dorsiflexion. The splint should be removable for massage and gymnastic treatments. The latter are of the greatest importance and should be given daily. Under this treatment a mild case will recover in from three to four months and a severe case in from six to seven months. If there is no improvement in four months nerve operations are indicated. The deformity of the shoulder viz abduction and internal rotation can easily be corrected by tenotomy and the pronation of the forearm by muscle transplantation.

PAUL R. BILLESLEY, M.D.

### SYMPATHETIC NERVES

Borchard A. The Surgical Treatment of Angina Pectoris. (*Zur Chirurgie des Herzes*). *Angiologie* 2: 147-151.

It is generally believed that the cause of angina pectoris lies in the coronary arteries. Wenkenbach designates angina pectoris as aortic pain (aortalgia). Epinger and Hoier have recommended resection of the sensory nerve of the aorta. Twenty-five years ago Frank suggested the severance of the reflex and pain tracts between the heart and great vessels and the brain and spinal cord by unilateral or bilateral resection of the cervical sympathetic. This was first done by Jonnesco.

Pain such as that of angina pectoris may have also a psychic source of origin. The effort must be imperative in judging the indications for treatment and the results.

The exposure of the depressor nerve and the cervical sympathetic is technically difficult. In cases of arteriosclerosis pressure on the large vessels must be reduced to the minimum because of the danger of disturbing the cerebral circulation. Injury to the vagus and superior laryngeal nerve must also be avoided. Bilateral resection of the depressors should always be done in two stages.

In a case of severe angina pectoris which had been treated internally for a long time without results the author severed the left depressor nerve and resected the sympathetic from the superior cervical ganglion through and including the middle cervical ganglion. Thirteen days after the operation symptoms developed which suggested an area of softening in the region of the distal branch of the left sylvian fossa. Death occurred six days later.

In the author's opinion the postoperative disturbance of circulation was due to a slowing down of the current dependent upon the resection of the cervical sympathetic and perhaps aggravated by local arterio sclerosis. Resection of the cervical sympathetic is therefore not without danger. If there is any indication of a disturbance of the cerebral circulation or an evident arteriosclerosis operation upon the sympathetic is contra-indicated. In such cases unilateral resection of the depressor nerve is preferable.

STABLE (Z)

### MISCELLANEOUS

Pagniez P. Accidents Due to Lumbar Puncture and their Pathogenesis (Dissertation à la Faculté de Médecine de la Faculté de Médecine de Paris). P. 15.

The complication most frequently attending lumbar puncture is headache. As a rule it persists for several hours and occasionally for several days. It is often accompanied by vertigo and nausea and at times by vomiting. In some instances the puncture is followed by pain in the back and a rise in the temperature.

Exceptionally there are more serious complications such as severe vertigo and syncope. Still more rarely death results. Lumbar puncture performed in the presence of tuberculosis of the spinal column may aggravate the spasmodic and paralytic phenomena and cause a serious crisis. In cases of septicæmia meningitis may result. This has been demonstrated experimentally as well as clinically.

These complications may be caused by the decomposition resulting from the removal of the fluid, the excessive production of fluid following the puncture or congestive phenomena provoked by the fall in the cerebrospinal fluid pressure. The headache will often be relieved by replacement of a portion of the fluid removed. It has been suggested that the headache is due to the continued leakage of fluid into the epidural tissues through the dura opening made by the needle. Ingvar showed experimentally that following lumbar puncture there is often a collection of fluid in the epidural space, the lumbar muscles and the subcutaneous tissues.

Meningeal hyperæmia may result from the production of a marked cerebrospinal fluid hypotension. In some instances lumbar puncture may cause hypertension by stimulating the production of cerebrospinal fluid. The intravenous use of hypotonic or hypertonic saline solutions is of value in relieving the unpleasant symptoms attendant upon the presence of cerebrospinal fluid hypotension or hypertension.

LOYAL T. DAVIS, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

- Lee B J and Herendeen R E The Treatment of Primary Inoperable Carcinoma of the Breast by Radiation A Report of Fifty Four Cases from the Breast Clinic. *Radiology* 1924 11 12
- Jenkinson E L Roentgen Treatment of Breast Carcinomata. *Radiology* 1924 11 351
- Stevens J T Modern Methods in the Treatment of Cancer of the Breast. *Radiology* 1924 11 356

All of these authors agree that a careful physical and roentgenological examination should precede any treatment. By this means the character, extent and depth of the lesion and the presence or absence of metastasis may be determined. The treatment will be rational and successful in proportion to the degree to which these facts are ascertained and appreciated.

LEE and HERENDEEN state that at the Memorial Hospital in New York the presence of any one of the following conditions causes a case to be regarded as inoperable: (1) definite fixation of the tumor to the chest wall (2) marked involvement of the axillary glands of the same side (3) definite fixation of the axillary glands to the chest wall (4) well marked fullness of the supraclavicular region of the involved side (5) palpable supraclavicular glands (6) firm palpable glands on the opposite side unless their presence can be well explained by some other lesion (7) evidence of metastasis in the other breast (8) diffuse extensive invasion of the skin (9) evidence of metastasis to the pleura, lungs or mediastinum (10) evidence of metastasis to bones (11) metastasis to distant organs such as the liver, brain, etc. (12) so called inflammatory carcinoma and (13) carcinoma of the breast complicating pregnancy in young women.

Of all cases of carcinoma of the breast coming to the clinic of the Memorial Hospital in 1920, nearly two thirds were inoperable. If the condition advanced and the patient is in poor general condition with a fairly marked degree of anemia and cachexia, no vigorous treatment is attempted. These cases are not rejected, however, because light radiation will relieve the suffering and occasionally gives an unexpected good result.

In the less advanced cases, more vigorous radiation is given, but the dangers of over radiation are borne in mind. Satisfactory regression can usually be obtained by a fractional dose method. During this treatment the patient's general strength and nutrition are carefully maintained.

JENKINSON and STEVENS discuss operable as well as inoperable cases. They urge both pre-operative and postoperative radiation of those subjected to surgery. They agree with Lee and Herendeen that every case is an individual problem and that there

is no standard technique which can be employed in all instances. While deep therapy with high voltage is used in certain cases, moderate voltages are employed as a rule.

In the experience of Lee and Herendeen and of Jenkinson, the treatment of pulmonary metastasis has been unsatisfactory. In cases with metastasis to bone, radiation often relieves the pain. This is especially true in cases of spinal metastasis.

Lee and Herendeen report on fifty-four cases of inoperable cancer of the breast. In all, the treatment was begun over three years ago. Ten (18 per cent) of the patients are still alive, and four of the ten are free from evidence of the disease. In the others, suffering was completely or partially relieved for a considerable time.

STEVENS' experience is based upon ninety-eight cases, sixty-nine of which were treated by surgery and radiation and twenty-seven by radiation alone. Seventy (71 per cent) of the patients are alive and free from any evidence of the disease. Stevens does not mention the time interval.

CHARLES A. HEACOCK, M.D.

## TRACHEA, LUNGS AND PLEURA

- Tucker G. Rapid Deductive Diagnosis of Dyspnea Requiring Tracheotomy. *S. & G. J.* 1914 19 4185

In severe laryngeal dyspnea, the definite indications for immediate tracheotomy are: (1) indrawing at the suprasternal notch (2) indrawing at the inner ends of the clavicles and (3) indrawing of the intercostal spaces and epigastrium. The author reports an illustrative case.

A rapid tracheotomy can be done low by splitting open the entire front of the neck at the first incision so that the trachea can be felt. There is no need of destroying the larynx by laryngotomy or of attempting to stab the cricothyroid membrane.

CARL R. STEINKE, M.D.

- Minges W. F. Peanut Kernels in the Lungs. Roentgen Ray Diagnosis of Non-Opaque Foreign Bodies in the Alveoli. *S. & G. J.* 1914 19 54

In cases of non-opaque bodies in the lungs, the X-ray sign depends not upon the shadow cast by the foreign body itself, but upon a change in the mechanics of the air passage brought about by the foreign body plus the pathological changes in the immediate vicinity and in the distal ramifications of the bronchi. There is first some degree of obstruction, second a greater or lesser accumulation of exudate, third a change incident to infection and fourth displacement with malfunction of the viscera due to

changes in the shape size and function of the affected lung

In the vast majority of cases the junction is affected more than inspiration. As a result there is obstructive emphysema. This must be differentiated from compensatory emphysema. Manges describes the shadow of the exudate from the oedematous inflammation and the shadow of infection caused by the foreign body.

An exposure should be made at full inspiration and another at the end of expiration. This is difficult in children because of their apprehension and air hunger. If the foreign body and the oedema of the mucous membrane obliterate a considerable portion of the trachea both lungs will show signs of obstructive emphysema. The appearance of air hunger is noted. The diaphragm on both sides is always lower at expiration than at inspiration. The heart assumes a more vertical position at expiration than at inspiration. If the foreign body in the trachea is of such shape or size that it does not obstruct a large portion of the lumen there are no dependable signs.

Manges emphasizes the importance of making repeated examinations and discusses briefly the mechanics of obstructive emphysema. The condition known as a drowned lung he finds difficult to explain satisfactorily. In cases in which the foreign body causes complete obstruction in the lumen of the bronchus the residual air distal to the obstruction becomes absorbed rather rapidly and there is collapse of the distal portion of the lung. When a considerable portion of the lung is involved there is rather severe dyspnoea.

In conclusion Manges describes the fluoroscopic findings in a case of obstructive emphysema due to a peanut kernel in the right main bronchus.

EMIL C. K. FISHER, M.D.

McCrae T. The Diagnosis of a Foreign Body in a Bronchus. *S. G. Cl. A. M.* 1944, 6.

There is a great difference in the immediate results following the aspiration of a foreign body into a bronchus. The symptoms and signs also vary greatly. The secretion which is brought up from the affected bronchus may pass over into the bronchi of the other lung and cause signs on the other side of the chest. If the foreign body has ball valve action the affected portion of the lung may become overdistended with air.

The author reports the histories of two cases illustrating some of the problems in the diagnosis. An error which is common particularly when the object is a nut is to regard the condition as pneumonia.

EMIL C. ROBERTS, M.D.

Clerf L. H. Bronchoscopic Lung Mapping in Disease of the Lungs. *S. G. Cl. A. M.* 1944, 10.

Clerf calls attention to the value of bronchoscopic lung mapping in diseases of the lung and reports a case in which a penetrating projectile was located and a case of bronchiectasis.

The method used was introduced by Jackson. A bronchoscope was passed and powdered barium sulphate was introduced into the desired tracheobronchial tree by insufflation.

In the cases of adults the procedure is carried out under local anesthesia but in the cases of children without anesthesia. No untoward effects have been observed. Only one lobe should be mapped at one examination.

WILLIAM E. SHIPLEY, M.D.

Lukens R. M. Pulmonary Abscess Following Tonsillectomy. A Cure by Bronchoscopic Drainage. *S. G. Cl. A. M.* 1924, 1.

The patient was a 3-year-old woman who had had a tonsillectomy under ether anesthesia six weeks previously. The day after the operation she had pain in the right side of the chest, cough with foul smelling expectoration, fever, night sweats, hemoptysis and loss of weight and strength.

Physical, x-ray and bronchoscopic examinations led to a diagnosis of abscess in the lower lobe of the right lung. Aerobic cultures of the pus were negative, no anaerobic cultures were made.

The first bronchoscopic examination made four months after the first showed the tracheobronchial tree and its secretions to be perfectly normal.

An interesting feature of this case was the rapidity of the development of the pulmonary symptoms. This suggested that they were of embolic origin but blood streaked sputum, one of the cardinal signs of pulmonary embolism, was absent until late. Another indication that the abscess was not of embolic origin was the absence of marked destruction of tissue as evidenced by the x-ray and the rapid clearing up of the lesion.

Both the physical and the roentgen ray examination revealed definite evidence of disease in the right lower lobe but did not rule out involvement of the middle lobe. Bronchography, however, showed that the pus was issuing only from an upper and outer branch of the right lower lobe bronchus. This finding was in agreement with physical signs in the axillary region extending posteriorly to the region of the scapula.

The treatment consisted in regulation of the diet, rest, postural measures and bronchoscopic drainage. No vaccine was used because it was impossible to obtain a culture.

The bronchoscopic treatment consisted simply in removal of the pus by suction and the injection into the abscessed area of 5 c.c. of a 20 per cent solution of gonemol in mineral oil. While the quantities of oil injected were fairly large there were no evidences of bronchopneumonia, minute abscess formation or spread of the infection.

Prompt and complete recovery resulted.

CARL R. STEINLE, M.D.

Moore W. F. Bronchiectasis and Pulmonary Abscess. *S. G. Cl. A. M.* 1944, 11, 87.

The first case reported was a case of general pulmonary suppuration with bronchiectasis in a

child 3 years of age who had a history of whooping cough measles congestion of the lungs and influenza Bronchoscopy showed a large quantity of pus welling up from both main stem bronchi This was aspirated At subsequent bronchoscopic examinations the suppurating areas were located in both lungs In a period of seven months sixty two bronchoscopic treatments were given These consisted in the aspiration of pus followed by irrigation with a solution containing 2 gr of picric acid and 7 drops of Lugol's solution in 1 pt of normal saline solution

As the patient became accustomed to the treatment the amount of morphine given was gradually reduced the drug finally being discontinued The bronchi draining the right side of the chest ceased to drain pus and gradually the focus became localized to the left lower lobe As the result of the bronchoscopic treatment of the suppurative foci in the lungs the distressing gastric symptoms ceased entirely but during a relapse at the tenth month all of the symptoms became aggravated The treatment was interrupted to permit the patient to accompany his family to the seashore The child gained steadily from 44 to 55 lb and is now normal in weight and appearance No hospitalization was required at any time during the treatments The child returned to his home in the afternoon of the day of each treatment

In the second case reported that of a woman 21 years of age the condition was a pulmonary abscess following tonsillectomy Recovery followed peroral bronchial aspiration and medication This case seemed to afford evidence of the aggravation of tracheo-bronchial asthma by acute suppurative conditions in the lungs While the first bronchoscopic examination revealed involvement of only the mucous membrane of the bronchi draining the suppurative area later examinations showed definite congestion and a spasm of the bronchial walls and the presence of a thick secretion which clung to the mucous membrane After the focus of infection in the middle lobe of the right side had become entirely healed the asthmatic attacks ceased

The roentgen ray showed that the healed areas became filled with fibrous tissue the contraction of which caused the adjacent organ to assume a new position

Today nine months after the bronchoscopic treatments were stopped the patient remains free from asthmatic attacks and has successfully passed through a very trying pregnancy

CARL R. STEINKE M.D.

Funk F H The Relation of Bronchoscopy to the Treatment of Lung Suppuration *Sw G Cl* 1914 9412

The author believes that in cases in which there is a localized acute or chronic lung suppuration without a pleural complication the most valuable procedure is bronchoscopic drainage The record of a case of his is given

After noting how well the lung suppuration clears up after the causative foreign body has been removed by bronchoscopy and adequate drainage has been established Funk concludes that this treatment is a rational basis also in cases of lung suppuration not due to foreign bodies Bronchoscopy is a very valuable procedure in the hands of those skilled in its use There is no mortality and no appreciable ill effect in suitable cases Drainage is established by direct aspiration of infected material However bronchoscopic treatment is only supplementary to postural drainage rest in bed fresh air a nourishing diet the free ingestion of liquids and the use of laxatives autogenous vaccines etc

In conclusion Funk says that bronchoscopy will not help every case but its safety commends it to trial

JAMES C. ROBERTS M.D.

## ESOPHAGUS AND MEDIASTINUM

Tucker G Retrograde Esophagoscopy Gastroscopy and Duodenoscopy *S G Cl* 1914 9417

When retrograde examination and treatment of the esophagus are contemplated gastrostomy should be done by a method that will permit the introduction of a tube in a direction to reach the cardia and the wound should be allowed to heal so that the stomach will not become separated from its attachment to the abdominal wall Proper healing usually requires two or three weeks

For the examination of the esophagus the author uses the esophagogastroscope of Jackson Anesthesia is unnecessary

Before the examination is begun the stomach must be empty Food should be withheld for six hours prior to the examination and the stomach lavaged before the retrograde esophagoscope is introduced The aspirating tube will remove any remaining fluids

The examination is best made with the patient in dorsal recumbency A small sand pillow placed under the back just below the angle of the scapula will lift the spine so that the hiatus will be more easily accessible If it is desired to explore the upper esophagus the patient's head and shoulders should project over the brail in the table from the middle of the scapula upward Crucial position should be avoided

The technique of esophagostomy and gastroscopy is described in detail and two illustrative cases are reported

CARL R. STEINKE M.D.

Pancoast H K The X-Ray Diagnosis of Surgical Conditions of the Esophagus *S G Cl* 1914 94134

In a review of the esophagus Pancoast has the patient swallow a capsule containing an opaque powder such as bismuth subcarbonate or barium sulphate The patient then assumes (1) the erect position (2) the reverse position and (3) an oblique prone position on the fluoroscopic table with the

right side of the chest on the table and the screen or the plate placed again at the left scapular region. The left knee is flexed up to the abdomen and both arms are raised above the head.

The esophagus is usually examined for obstruction, diverticula and fistulae. Obstruction may be caused by external pressure on the esophagus produced by aneurism (usually of the arch of the aorta), a neoplasm in the neck, the mediastinum or a lung enlarged gland in the mediastinum, mediastinal or pinal abscess or a large dilated heart. Changes in the esophageal wall may be due to neoplasms, benign ulceration, cicatrization of an old ulcer, congenital stenosis or atresia. The author has found carcinoma most frequently in the lower third of the esophagus.

Early diagnosis is important. This depends upon X-ray and esophagoscopic examinations. The swallowing of a liquid suspension of barium or bismuth will not always reveal carcinoma of the esophagus; it fails especially when the lesion is in the early stages before obstruction has become a marked complication. In all cases in which the cause of pain cannot be found on routine examination of the spine and esophagus it is important to examine the esophagus with the use of the liquid suspension and the capsule. Not infrequently obstruction is found with the use of the capsule when it is not revealed by other methods.

The detection of opaque foreign bodies is comparatively easy, but reliance cannot be placed entirely on the fluoroscope as small objects may be overlooked. Most foreign bodies are of one dimension, but the others will be found lying transversely in the esophagus. In the trachea they usually lie with the longest diameter in the anteroposterior position. After the removal of one foreign body it is extremely important to make a second X-ray examination of the case as another foreign body may be present.

The presence of a non-opaque foreign body may be demonstrated by obstructing the passage of opaque liquid or semisolid food by the behavior of opaque food in the esophagus by giving the patient an opaque powder in capsule form to render the

foreign body opaque after the capsule dissolves and by the behavior of the capsule in the esophagus.

Care must be taken to differentiate between the presence of foreign bodies in the air passages and those in the esophagus.

Obstruction to swallowing may result also from reflex disturbances. The obstruction is always found at the hiatus esophageus. There is more or less dilatation above with an abrupt termination at a point in the lower end of the esophagus. The characteristic feature of the constricted area is a very marked curve of the lower end of the esophagus to the left in the direction of the stomach. A second important point is the fact that if an amount of food sufficient to overfill the esophagus is given the spasm will be more or less relaxed and the food will be seen to enter the stomach in spurts and frequently in very large quantities, whereas before the esophagus is fairly well overloaded little or nothing passes through the point of constriction or spasm.

The great majority of diverticula are found according to Funk in the upper portion of the esophagus.

In the examination of the esophagus the following points should be borne in mind:

1. The X-ray study of the esophagus should precede the use of the esophagoscope and the bougie.

2. A careful study of the esophagus should be made in every case of substernal pain.

3. Examination of the esophagus should never be regarded as complete until a capsule filled with bismuth will pass readily without stopping.

J. M. C. ROBERTS, M.D.

Clerf, L. H. Atresia of the Esophagus. *Surg. Clin. N. Am.* 924.

Clerf emphasizes the dangers of peroral esophagoscopy in atresia of the esophagus especially when the closure is complete when there are multiple strictures and when pouching has taken place. He calls attention also to the ease with which retrograde bouginage may be accomplished and the value of the Tucker bougie in the treatment of atresia.

WILLIAM L. JACKLETON, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Vallack A C A Method of Operating upon  
Strangulated Umbilical Hernia *Med J A S*  
1914 924 132

The author has devised a procedure to facilitate speed and minimize the dangers of operations for strangulated umbilical hernia.

An elliptical incision is made around the hernia. If the sac is large the incision lies upon the side of the hernia. Enough skin is left to permit proper closure without tension and a sufficient number of vertical incisions are made from the primary incision to permit reflection of the skin from the fascia. The fascia is left bare for some distance in every direction. An incision is then made through the fascia and peritoneum around the neck of the sac and the sac is detached from the abdominal wall in such a manner as to leave it attached only to the viscera.

The sac is then lifted away protected with towels. The abdominal cavity is also protected. The sac is opened preferably with the scissors and the contents are examined. If the bowel can be replaced this is done but if it is gangrenous the involved portion is removed and the continuity of the intestine re-established by a lateral anastomosis. If possible the fascia is repaired by overlapping it from above downward otherwise it is from side to side.

This operation was performed on a woman who had strangulation of an enormous ventral hernia for two days. The sac contained strangulated large intestine unstrangulated small intestine the uterus and adnexa. A previous ventral hernia had permitted the peritoneum to drag the uterus with it into the hernia. The patient made a complete recovery.

The author describes a simple method of determining the viability of the intestine. If there is any doubt as to whether the intestine should be resected or replaced he makes incisions into the muscular coat. If the intestine bleeds properly he replaces it.

He describes also an ingenious method of controlling regurgitant vomiting. When the patient is fully anesthetized he introduces a stomach tube into the stomach and fastens it to the cheek with a towel clamp. The end of the tube hangs over a tub. When the bowel contents are regurgitated into the stomach they are siphoned off. Vallick has used this method for a number of years but states that he did not originate it. Hill J M CAMP MD

## GASTRO INTESTINAL TRACT

Mnod G Hæmatemesi Without Lesions  
*B r M J* 94 658

In this article are reported three cases of so called gastritis in which careful search at operation

failed to reveal a lesion which might be responsible for the bleeding.

Of the various theories as to the etiology the most important are those which ascribe the condition to disturbance of the gastric nerve supply associated with appendicitis cholecystitis hepatitis or gas troplosis. This type of hæmorrhage is rarely fatal. As a rule the treatment should consist in rest. Operation should be reserved for cases in which a definite lesion is demonstrated by the roentgen ray.

VERNE G BURDEN MD

Burk W The Surgical Treatment of Gastric and Duodenal Ulcer (*Zur pathologischen Beschaffenheit des Magens und Zwölffingerdarmgeschwürs*)  
*Zeitschrift für Chirurgie* 1923 1 1569

In spite of the numerous articles that have been written on gastric and duodenal ulcer the etiology of these lesions is still unexplained. We have yet to determine also (1) the most desirable type of operation for ulcer of the stomach and duodenum (2) the etiology of peptic ulcer of the jejunum and its relationship to gastric operations and (3) the end results of the various operative procedures.

The author reports the results of operation in thirty-six cases of duodenal ulcer and 109 cases of gastric ulcer. He draws the following conclusions:

1. Callosus ulcer of the stomach and duodenum should be resected whenever possible according to the Billroth II method.

2. If resection is impossible in cases of duodenal ulcer excision of the pylorus and resection of the pyloric portion of the stomach should be done.

3. In cases of simple ulcer of the pylorus pyloric resection is indicated.

4. The von Eiselsberg method of excluding the pylorus should be abandoned.

5. Gastric enterostomy is indicated only for simple ulcer of the body of the stomach unusually non-resectable ulcer of the lesser curvature and possibly the cases of very obese persons or those with heart disease.

6. Peptic ulcer of the jejunum should be treated by removing the ulcer-bearing area of the small intestine and the adjacent portion of the stomach. If excision of the pylorus was done at the first operation the remaining portion of the pylorus and the primary ulcer must also be removed.

DECKERS (Z)

Galpern J The Results of Operations on the Stomach for Ulcer and Other Conditions 1908  
1922 (*Revue de Chirurgie et de Médecine*)  
*Uw* 1908 9 2 A h f M Ch 023 cxx 8'

The author reviews a series of 508 cases including 108 cases of pyloric ulcer and 215 of ectopic ulcer.

and ninety three of duodenal ulcer. Peptic ulcer of the jejunum occurred five times. The relative frequency of gastric ulcer to duodenal ulcer was 4:1.

Operation was performed only in cases that were refractory to internal treatment. Cases of old callous ulcers, stenosis and perforation were of course operated on at once. There were 480 posterior gastroenterostomies with a short loop. Of the twenty four deaths only eighteen (37.5 per cent) could be attributed to the operation. In fifteen cases the ulcer perforated before operation, six of these in which suture and drainage were used were fatal. Of the nine in which a simultaneous anastomosis was done only three were fatal.

Of fifty one operations for ulcer at the pylorus the final results were excellent in thirty three and good in six. Therefore good results are obtained in 72 per cent of the cases.

There were 115 operations for extrapyloric ulcer. The results were excellent in seventy four cases and the condition was considerably improved in twelve. Therefore a good result was obtained in 74 per cent.

In fifty two cases of operation for duodenal ulcer the results were excellent in thirty six and good in six. Therefore the results were good in 87 per cent.

Poor results following a gastroenterostomy are to be attributed to the formation of a new ulcer. Gallern resects only when he suspects carcinoma and when a gastroenterostomy has proved unsuccessful. In the entire series of cases he performed a resection only thirty two times. Of fifteen patients subjected to this operation for peptic ulcer of the small intestine six died. In seventeen cases of resection for gastric ulcer there were two deaths. Of eight patients re-examined subsequently four showed good results and four showed poor results.

B. R. M. A. (L.)

Shallow T. A. Gastrostomy An Improved Technique. *S. & C. J. Am.* 1924, 114.

Shallow reports a series of eighty cases of gastrostomy studied by him on Da Costa's service at the Jefferson Hospital Philadelphia.

The advantages and disadvantages of the various operations for gastrostomy are discussed. For an ideal result the fistulous tract must be at right angles to the abdominal wall in order that the opening in the stomach will correspond to the opening in the abdominal wall. The opening must be large enough to permit retrograde esophagocopy within three weeks without causing hemorrhage or leakage into the peritoneal cavity. The tract must be kept patent by the retention tube. Closure should take place without the necessity for a secondary operation.

The author's operation combines the desirable features of the Kader and Senn operations.

Operation should be performed early before the patient becomes greatly weakened.

WILLIAM F. SHACKLETON, M.D.

Delore A., Milchon L. and Pollosson E. Cicatricial Obliteration of the Gastroenterostomy Openings (De l'obliteration cicatricielle des bouches de gastro-entérostomose). *Rev. d'Chir.* Par. 1924, 21: 79.

The authors report nine cases in which the opening made at gastroenterostomy became obliterated by a cicatricial process in the absence of neoplastic or ulcerative change.

It is generally assumed that the opening of a gastroenterostomy becomes obliterated when the pylorus becomes permeable but many secondary operations have shown that it may become closed before pyloric permeability is re-established.

In the authors' opinion the cause of cicatricial obliteration is to be found in the inflammatory lesions involving all the strata of the stomach which are frequently found in the course of operation. Most important of these are the inflammatory lesions of the muscular tissue. The authors believe that the lesions producing cicatricial obliteration of a gastroenterostomy and those producing peptic ulcer about the gastroenterostomy opening differ only in degree.

The symptoms of closure of a gastroenterostomy opening generally appear about three months after the operation. This differentiates them from those of gastrojejunal ulcer which usually are not noted until after a period of years. In cases of cancer the symptoms are often mistaken for those of recurrence and spread of the neoplasm.

At a second laparotomy it is essential first to locate the site of the anastomotic opening. Sometimes this will be difficult or impossible. In such cases a retrocolic or precolic anterior gastroenterostomy with a large opening should be established. When the old opening has been completely closed it is best to form a new transmesocolic posterior opening.

When the opening is found still in the process of obliteration the authors dissect out the stomach and intestine, open the orifice at one side with the scissors, make a slit about 3 or 4 cm. in length in the gastric wall and intestine and suture the stomach and intestine together in three planes. This procedure is a simple lateral enlargement of the opening which preserves the permeable segment of the previous opening.

W. A. BRENNAN

Behrend W. Variability of the Symptoms and Pathology of Acute Intestinal Obstruction. *S. & C. J. Am.* 1924, 116.

To illustrate the variability of the symptoms and pathology of intestinal obstruction the author reports five cases.

Case 1 was a case of volvulus of the intestine in a robust man 65 years of age who had had marked constipation for years and suffered a sudden attack of abdominal pain and vomiting. The day after the attack there was recession of the symptoms and on palpation the abdomen seemed normal. The bowels had moved and flatus had been passed. The



following day the abdomen again became tense there was no bowel movement and the pulse rate increased slightly. The history suggested carcinoma of the sigmoid diverticulitis and volvulus a definite diagnosis was impossible.

When the abdomen was opened the descending colon was found completely twisted on itself and distended above and below the constriction. On the insertion of a rectal tube beyond this point a large amount of flatus and fecal matter was expelled. The patient made a good recovery.

In the second case reported the condition was thrombosis of the superior mesenteric artery. The patient was a woman 42 years of age who had suffered with asthma for eighteen years. She was admitted to the hospital complaining of pain distention of the abdomen and intestinal stasis. There was no vomiting.

Operation was performed under local anesthesia four days after the beginning of the intestinal obstruction. The delay was due to the patient's poor general condition resulting from the respiratory embarrassment caused by the asthma. Thrombosis of the mesenteric artery and massive gangrene of the ileum were found. Following the removal of 30 in. of gut the continuity of the intestine was reestablished by end to end anastomosis and the wound closed without drainage. The patient made an uneventful recovery.

Case 3 was a case of diaphragmatic hernia with intestinal obstruction in a child 7 years old. Five months before the patient was seen by the author he was operated upon for empyema complicating measles and two weeks previously he was seized with severe pain in the epigastric region. The condition improved after evacuation of the bowels by means of a cathartic but a few days later there was an attack of severe abdominal pain accompanied by the vomiting of a material which at first was whitish and later brown and green. Operation was advised but the parents refused. Physical examination revealed a scaphoid abdomen and marked lack of muscle tone. The diagnosis was made by means of the roentgen ray. The portion of the stomach which lay within the chest wall showed six hour retention of barium.

The first operation was performed under local anesthesia six days after the patient's admission to the hospital. This disclosed that the stomach transverse colon and great omentum had been drawn through a circular rent in the diaphragm about 1 1/2 in. in diameter and to the left of the median line. The colon and the stomach were brought down to their normal position by traction on the great omentum and the rent in the diaphragm was closed.

After the operation the vomiting ceased. Convalescence was slow but uneventful for several days. On the fifth day vomiting returned but was relieved by gastric lavage.

At a second operation performed because it was thought that a piece of the omentum might have

gone through the diaphragm an omental band was found wrapped around a portion of the ileum and almost completely closing its lumen. The patient recovered.

The fourth case was a case of acute intestinal obstruction due to a gall stone in the ileum. The patient a woman 48 years old had been ill for two days before the author was called in consultation. She complained of pain in the abdomen which was particularly intense in the right iliac fossa. A diagnosis of acute appendicitis had been made.

At operation which was performed immediately under nitrous oxide-oxygen anesthesia a large quantity of odorless fluid escaped. The appendix showed chronic inflammation but its condition was not sufficiently serious to account for the symptoms. The stomach and gall bladder were normal. The intestine was examined because of the marked distention of their walls. At about the center of the ileum the small intestine was collapsed and presented a smooth oval hard mass the size of a walnut. Incision over the mass proved it to be a large gall stone. The intestine was sutured in the opposite direction to the incision in the ileum and the abdomen closed in the usual manner.

Death occurred several hours later but was believed due to a heat stroke caused by the high temperature of the June night on which the operation was performed.

In the fifth case that of a newborn infant there was congenital absence of the ileum. Vomiting occurred immediately after birth. The abdomen was markedly distended. Palpation was followed by rigidity and constipation was very evident. The nature of the condition was diagnosed at once. The patient performed three days after birth. The infant died a few hours later.

DAN MILLER M.D.

**Don't The Action of Spinal Anesthesia in the Course of Intestinal Obstruction (De la tumeur intestinale achillée ucrain local test nat) Lv ch 1924 xx 7**

A 63 year-old woman operated upon eight years previously for a strangulated crural hernia on the right side experienced several mild attacks of intestinal obstruction and five days before her admission to the hospital developed complete intestinal obstruction. As the marked distention of the abdomen contraindicated exploratory laparotomy immediate caecotomy was advised. Within a minute after the injection of the anesthetic between the third and fourth lumbar vertebrae and the removal of 10 ccm of cerebrospinal fluid a diarrhoeic evacuation of faeces and gas began and very active peristaltic contractions were seen extending from the right iliac fossa along the ascending and transverse colon. In a few minutes the abdomen was completely flat and soft. Operation was therefore deferred.

The following day after a period in which the general condition remained good a mild subumbilical laparotomy was done under local anes-

thema because of the recurrence of slight distention. The small intestine showed markedly distended and contracted segments. Two omental bands contracted the transverse colon without completely obstructing it and at the site of the old strangulated hernia were tension like tags drawing the transverse colon down. These were released. No other cause of obstruction was found. The caecum was fastened in a small iliac incision on the right side because it was thought that the performance of a caecostomy might be necessary later. The patient made a complete recovery.

A second case reported was that of a man with cancer of the 1 ft colon and complete intestinal obstruction. As in the first case spinal anesthesia in a few minutes caused evacuation of the intestines and operation was deferred until a more favorable time.

Cotte has observed violent peristaltic contractions in more than 100 cases of spinal anesthesia. In cases of caesarean section in which this type of anesthesia was used the uterus appeared to contract rapidly after the operation and there was little hemorrhage.

Bonniot suggests that the influence of spinal anesthesia may be explained by the assumption that it suppresses the causative intestinal spasm or dissociates the medullary and ganglionic centers of intestinal movement by paralyzing the sympathetic fibers at the joint where they emerge from the lumbar cord.

As indications for its use Cotte mentions (1) cases of postoperative intestinal paralysis associated with attenuated peritoneal infections in which evacuation of feces and gas is difficult and fistulization is considered and (2) cases in which the formation of an artificial anus is considered.

If spinal anesthesia is an ineffectual operation is not retarded and if it is effective an emergency operation is rendered unnecessary.

WALTER C. BURKET, M.D.

Peple, W. L. Intussusception. Report of an Unusual Case. J. S. M. J. 31: 1031, 1914.

A white male child previously well, operated upon five days after the onset of typical symptoms of intussusception. A sausage shaped tumor was felt in the left lower quadrant of the abdomen.

At operation which was done under local anesthesia the mass was found to be an intussusception of the ileum into the caecum, the cecum and the descending colon. This was reduced. Its starting point was a small tumor about 3 in. long which was attached to the inner wall of the ileum about 2 ft. above the ileocecal valve. This appeared to be an inverted diverticulum with a lumen the size of a slate pencil. At its tip was a firm mass. The tumor was excised at its base and the opening sutured transversely.

The patient died a few hours later. The mass at the tip of the diverticulum proved to be pancreatic tissue.

ST. J. S. C. E. M. D.

Nitch, C. A. R. Cystic Pneumatosis of the Intestinal Tract. Brit. J. St. 8: 1923, 14.

This article is based on two cases coming under the author's observation. The full name of the rare pathological condition under discussion is pneumatosis cystoides intestinalis hominis.

Case 1 was that of a man aged 48 years who had suffered for fifteen years with epigastric pain and belching following the ingestion of food which was relieved only by vomiting. A physician made a diagnosis of pyloric stenosis secondary to ulcer. The patient refused operation but consented to daily gastric lavage and performed it himself for six years. The lavage gave him relief but he lost considerable weight. He entered the hospital for operation in June 1918.

Laparotomy revealed extreme pyloric stenosis. A posterior no loop gastrojejunotomy was done. A coil of small bowel stuffed with grayish white elevations presented in the wound. The elevations proved to be multilocular subperitoneal cysts varying in size from that of a pin to that of a pea. When one of these cysts was punctured the contents were found to be gaseous. The entire small bowel except the first 12 in. of the jejunum and the distal 12 in. of the ileum was affected. The gas cysts were present also in the transverse mesocolon at the base of the appendices epiploicae. Recovery was uneventful and the patient rapidly regained his lost weight.

Case 2 was that of a woman 40 years of age. Twelve days before she consulted the author the patient had been seized with acute colicky pains in the right iliac fossa. The pain recurred a week later. There was slight constipation but no vomiting. Physical examination revealed a tender elongated swelling in the right iliac fossa which stiffened and softened every few minutes and suggested an intussusception. The temperature and pulse were normal.

At operation the wall of the caecum and ascending colon were found inflamed, thickened and crepitant on pressure. In the surrounding connective tissue and in some of the appendices epiploicae were beads of gas. The distal ileum and the appendix were not involved. In the mesentery of the ileum were several enlarged tuberculous glands. The distal 6 in. of the ileum and the caecum, the ascending colon and one third of the transverse colon were excised, the lumen of the bowel being restored by lateral ileocolostomy. The patient made a rapid recovery and has remained well to date.

The specimen from the second case is now in the Museum of the Royal College of Surgeons. Histological examination showed that the connective tissue and fat about the caecum and ascending colon contained a large number of gas bubbles. The walls of the caecum were thickened throughout from submucous emphysema and the mucous membrane of the ascending colon was raised in prominent elevations. The elevations were so prominent and were indurated so completely that they locked the lumen of the large bowel. No ulcer was found in the bowel to account for the effusion of gas. Therefore

the emphysema must be ascribed to an infection of the wall of the cæcum by a gas producing bacillus. However the presence of such an organism could not be demonstrated in the exudate or cells. It is probable that a subacute infection involved the submucosa and muscularis.

The author has been able to find only eighty five cases of cystic pneumatosis reported in the literature. The earliest description was made in 1737. In about two thirds of the cases the condition was found at operation. An analogous condition termed intestinal emphysema occurs in swine chiefly about the rectum. The author believes this to be of bacterial origin.

Of the eighty five cases of cystic pneumatosis reported in the literature the lesion was found at autopsy in twenty nine and in nine of these (31 per cent) death was due to complications of ulcer of the stomach or duodenum. In thirty four (63 per cent) of the fifty five cases in which the condition was discovered at laparotomy an ulcer was found. Accordingly in 50 per cent of all reported cases the condition was associated with duodenal or gastric ulcer. In 83 per cent of these there was obstruction. Other less common co-existing lesions are cancer, tuberculous enteritis and gastro-enteritis. Therefore it seems clear that some form of obstruction of the gastro intestinal canal accounts for a large number of cases. The condition occurs about three times as frequently in males as in females and is most common in the fourth and fifth decades.

The cysts are usually situated in the distal ileum and the large bowel. They may be diffusely distributed or collected in small isolated masses. Bacteria have rarely been seen in them or cultivated from them. Postmortem cultures have shown chiefly the bacillus coli or bacillus aerogenes.

The theories which ascribe the condition to bacterial action or mechanical forces seem to explain its pathology best. It is probable that the air is forced into the intestinal walls through an abrasion in the mucosa and then enters the network of lymphatics and travels along the intestine. Cyst formation is due directly to an obliterating endolymphangitis. The association of cystic pneumatosis with an ulcer in 50 per cent of the cases and with an obstructive lesion in 70 per cent seems to prove that the mechanical theory is correct.

The symptoms are usually those due to the ulcer or associated intestinal obstruction. The treatment consists in attention to the ulcer or relief of the obstruction. It is perhaps best not to disturb the cysts certainly it is unwise to puncture them. In some cases in which the obstruction is due directly to the cysts resection of the portion of intestine involved becomes necessary as in the author's case. The author's first case was due probably to mechanical factors and the second to micro-organisms.

The article is supplemented by a tabulated list of the eighty five recorded cases of cystic pneumatosis and an extensive bibliography. The illustrations are very good.

JOHN W. MCKAY, M.D.

Brown P. W. Tuberculomata of the Bowel. *S. J. C. V. A. M.* 1924. 360.

This article is based upon a review of the thirty two cases of hyperplastic tuberculosis of the bowel (tuberculomata) observed at the Mayo Clinic during the past five years.

Tuberculomata of the intestinal tract are localized manifestations of tuberculosis and by virtue of their localization present a difficult problem in the differential diagnosis.

Distinguishing tuberculoma from carcinoma are the average age at which the symptoms appear and their average duration but a definite diagnosis is sometimes impossible particularly in the cases of older persons.

Intestinal tuberculosis may be primary. Of the cases reviewed 30 per cent appeared to be of this type. As the lesions may arise from infection conveyed by tuberculous meat and milk greater efforts to exterminate bovine tuberculosis are necessary. Ileocaecal tuberculomata may be easily removed by operative procedures. When the lesions are present also in the small bowel or when they are confined to the small bowel the chance for cure by surgical measures is much less favorable.

The advisability of exploration often depends on the presence and extent of tuberculosis elsewhere. In certain cases surgery becomes urgent because of obstruction.

In two cases of tuberculomata of the small bowel neo-trisphenamin was tried. In one apparently complete recovery resulted but in the other there was no appreciable change in the condition.

Craig W. McK. The Lymph Glands in Carcinoma of the Small Intestines. A Review of the Condition of the Glands in Carcinoma of the Gastro Intestinal Tract. *S. J. C. V. A. M.* 1924. 479.

During the last fifteen years operation has been performed at the Mayo Clinic in 4684 cases of gastro intestinal carcinoma and the condition has been verified pathologically. Thirty six of the carcinomata were in the small intestine. The incidence of regional glandular involvement was investigated and compared with that in other portions of the tract.

The investigation of the glandular involvement of the remainder of the alimentary tract showed that in the stomach the incidence was 52 per cent in the large intestine 37 per cent in the cæcum 32 per cent in the rectum 47 per cent as contrasted with an incidence of 66 per cent in the small intestine. Cases of carcinoma occurring in the duodenum jejunum and ileum were considered separately from the standpoint of operability and prognosis as evidenced by the growth and the amount of glandular involvement.

There were six cases of primary carcinoma of the duodenum. The glands were studied in four which showed no marked involvement. One of these cases a carcinoma of malignant papilloma was that of a patient who lived two years after operation.

In eleven of twelve cases of primary carcinoma in the jejunum carcinoma was found in the regional glands. In the case of an inoperable growth which had involved all of the glands a palliative anastomosis was made around the growth the patient lived two years. In the cases in which resection was performed the operative mortality was high.

Eight cases of primary carcinoma in the ileum lowered the mortality and decreased the incidence of glandular involvement since only two cases showed carcinomatous glands and the minimal survival was fourteen years.

There were also ten cases which were listed as indeterminate or secondary to carcinoma of other viscera. Only two cases are of special interest. One was that of a woman who had had inoperable epithelioma of the cervix and later developed symptoms of obstruction. At operation a gland removed for diagnosis showed the microscopic picture of epithelioma. The other case also showed the symptoms of intestinal obstruction and in the jejunum were multiple growths which had metastasized to the regional glands. A gland removed for diagnosis showed typical melano-epithelioma. The history of the removal of a mole three months previous to the onset of symptoms was elicited.

Carcinoma of the small intestine may be of primary or secondary origin. Both types may cause obstruction. In involvement of the regional lymph glands was higher than elsewhere in the gastrointestinal tract occurring in 66 per cent of the cases. From the standpoint of the prognosis the jejunum is the most favorable location for malignancy. It is also the region most commonly involved. Adenocarcinoma was present in all cases of primary malignancy. The possibility of a secondary neoplasm must be ruled out by microscopic examination of the growth or the involved gland.

Akerlund A. The Roentgen Diagnosis of Duodenal Ulcer with Regard to the Local Direct Roentgen Signs. (1) Roentgen diagnosis of ulcer of the duodenum must take into account the following factors: Roentgen symptom 1) If it is a G. G. B. I. S. C. Ch. 0.3.

For the examination of duodenal ulcer the luobulb must be filled as completely as possible and the opaque material should be retained in the bulb as long as possible. The bulb must be X-rayed from various directions and in various positions of the body. In several exposures must be made from the most favorable angles of projection.

Three 18 by 24 in. plates will suffice for twelve pictures. Good filling is obtained by the administration of a barium mixture of creamy consistency followed immediately by forceful manual expression of the contents of the stomach. The patient may lie on his right side or on his abdomen or in a position midway between these two. The lower portion of the duodenum may be blocked by means of a trusty gentle air compression in the region of the bulb.

The erect position is the best. Often it is necessary for the patient to rotate the trunk to the left. In the cases of fat persons good pictures of the duodenal bulb may be obtained in the lateral position with the sinistrodextral projection. Every patient should be examined with the fluoroscope in the erect abdominal dorsal and various oblique positions. A quick and convenient method of obtaining on the permanent plate the picture obtained on the fluoroscopic screen is to take four pictures in immediate sequence on one plate. The author makes four exposures of 0.4 to 0.5 second at intervals of one half minute.

The diagnosis of ulcer is based chiefly on the deformities caused by the lesion. Every open ulcer that has penetrated the deeper layers of the wall produces an alteration in the shape of the shadow cast by the contrast meal filling the duodenal bulb. A negative diagnosis should be made only after a careful study of roentgen pictures of the bulb in various projections and several series. The following deformities warrant a diagnosis of duodenal ulcer.

1. An ulcer niche caused by the ulcer crater. This is found in about 60 per cent of cases. A negative finding from external inspection and palpation of the duodenum on laparotomy is no proof of the absence of an ulcer under such conditions even a large ulcer may be present. A niche in the duodenal bulb is most commonly found in the outline of the lesser curvature. Frequently it is seen as a bulging of the outline of the bulb more rarely as a denser fleck in an otherwise normal or altered bulb shadow. As a typical ulcer deformity the author designates an ulcer niche and retraction on the side of the lesser curvature and a circular contraction on the side of the greater curvature (a miniature of ulcer of the stomach).

2. A bulb defect such as local contraction and narrowing of the shadow. This is most common and pronounced on the lateral contour of the bulb where it is mostly a spastic condition and varies in form. On the side of the lesser curvature it is less distinct, more stable and usually due to an organic cause.

3. Retraction of the bulb which consists in flattening in a longitudinal direction and shortening of the normally bulging contour. This is almost always located on the medial side of the bulb and may be caused by spastic or organic conditions. The retraction may cause an eccentric and wide open pyloric lumen.

4. The ulcer diverticulum a pouch shaped bulging in the duodenal wall near the point at which ulcer is most common.

Persisting contrast flecks are not a certain indication of ulcer as they may arise from other causes. Other alterations in the shape of the shadow of the cap are of secondary importance.

Pathognomonic of duodenal ulcer are a niche in the bulb, a spastic defect on its lateral contour and retraction on its medial contour. An eccentric





4. Careful after treatment with the administration of large quantities of fluid and glucose and in desperate cases blood transfusion.

When these precautions are taken, operation is a legitimate risk. **MICHAEL H. HONAN, M.D.**

MICHAEL H. HOBART, M.D.

Judd E S Problems Encountered in the Treatment of Disease of the Biliary Tract *Am J Surg* 1924 27: 61

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During the last few years our conception of the source of infection of the gall bladder and the manner of its distribution to the adjoining tissues has greatly changed. Inflammation of the liver and probably also of the pancreas in association with infection of the gall bladder may account for the persistence of symptoms in some cases or for their recurrence after removal of the gall bladder. This changing conception of the pathology of the gall bladder does not change our plan of surgical treatment; it still suggests that the procedure of choice is cholecystectomy. Usually the clinical symptoms of gall bladder disease are definite and distinct, permitting a positive diagnosis.

Occasionally with obscure symptoms of trouble in the upper right quadrant of the abdomen there is trouble in the biliary tract but it is not yet recognizable as in early cases of hepatitis in which the gall bladder is only slightly involved or in early cases of primary pancreatitis.

Since full has been making careful observations on the condition of the liver and pancreas when operating for disease of the gall bladder he is recognizing changes that are often associated with cholecystitis which formerly were not interpreted. He has observed that inflammation in the gall bladder & biliary tract may exhibit little if any gross evidence of its presence. In some cases it may be necessary to open the gall bladder and examine an excised specimen in order to determine the nature of the condition. Various factors which aid in leading to a proper conclusion regarding these cases include (1) the ease with which the gall bladder may be compressed (2) the thickness of gall bladder wall (3) the character of the bile and (4) the amount of fat deposit in the wall as in heating a thrombotic inflammatory process.

The results of operation for inflammation in the biliary tract are as a rule satisfactory. Following cholecystectomy the removal of stones from the common duct and drainage of the biliary tract the patient returns to a normal state of health in a short time with very slight prospect of further trouble.

MARY I. SCHOLL, M.D.

Martin W. Recent Controversial Questions in  
Gall Bladder Surgery Ann Surg 94:122

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There have been no reports of serious interference with function or loss of nutrition following the removal of the gall bladder although thousands of cholecystectomies have been performed during the last forty years. For a number of years observations

have been recorded which seem to show a diminution in the acid reaction of the gastric contents after the removal of the gall bladder or after morbid changes which destroy its function as a bile reservoir and cases have been reported in which there was a slight transitory diarrhea with the passage of several stools made up entirely of bile. However the power of adaptation possessed by the body seems to mask or compensate for changes in function caused by the operation and the postoperative disturbances are apparently not due to changes in function due to the absence of the gall bladder.

The author has found that 94 per cent of patients subjected to cholecystectomy are free from all symptoms after the operation. Of the 16 per cent with symptoms, more than half complain of epigastric pain and discomfort in the neighborhood of the scar. The pain varies from slight to marked discomfort and at times is accompanied by a feeling of distention. Not infrequently the above symptoms such as distention inability to eat certain foods, nausea and vomiting which are so similar to the symptoms characteristic of gall bladder disease that it is difficult to assign them to a cause other than infection of the gall bladder wall.

The removal or drainage of a slightly infected gall bladder is sometimes followed by extensive adhesions fixing the pylorus or the duodenum to the under surface of the liver and causing symptoms of interference with the function of these organs. No relation between the severity of the lesion in the gall bladder and these gastric symptoms has been established nor has closure of the abdomen without drainage prevented their development.

There is considerable evidence that now and again bile leaks from the cystic duct even after the duct has been carefully isolated and ligated. It is generally believed that there are more adhesions after drainage than after removal of the gall bladder.

In 33 percent of the cases with postoperative symptoms there have been attacks of jaundice vomiting and signs of intermittent infection and in 2 percent of the cases in which a cholecystectomy was done there is evidence of interference with the flow of bile through the common duct.

The author believes that the removal of the gall bladder is not justified by slight lesions of its wall. Increasing symptoms of indigestion and that it has not been proved that the majority of infections of the wall of the gall bladder causing symptoms represent a direct extension from an inflamed liver through the lymphatics or that bacteria enter the portal circulation from an obliterating appendix in sufficient numbers to produce a hepatitis recognizable clinically.

In a very large percentage of cases of cholelithiasis may be considered an important factor determining the final judgment the persistence and the transference of the infection.

In cases of gall stones and well marked lesions of the gall bladder wall uncomplicated by lesions of the common duct cholecystectomy is associated with a low mortality and gives excellent results.

There is little clinical or autopsy evidence of the association of persistent hepatitis cirrhosis or pancreatitis when the disease is confined to the gall bladder wall.

Common duct stones, cholecystitis and cholangitis are late lesions with a high mortality. Operation should therefore be performed before these conditions develop. HOWARD A. MCKNIGHT, M.D.

Speese J and Klein T. The Use of Iletin in the Postoperative Treatment of Acute Hemorrhagic Pancreatitis. *S & G A Am* 1944 15: 255

The authors report a case of acute hemorrhagic pancreatitis operated upon four days after the onset of symptoms in which the use of Iletin was apparently very beneficial in re-establishing the carbohydrate tolerance and tiding the patient over a serious postoperative period. SIMUEL KAH, M.D.

Ramsay G W St C. Anæmia with Enlarged Spleen in Infancy and Childhood. *Infantile Splenic Anæmia B I J Child Dis* 1944 43

Anæmia with enlargement of the spleen in infancy and childhood has been regarded as (1) a distinct disease entity (2) an aleukæmic stage of true leukæmia (3) a condition midway between simple anæmia and leukæmia (4) a transition stage between pernicious anæmia and leukæmia and (5) a primary disorder of the bone marrow due to rickets.

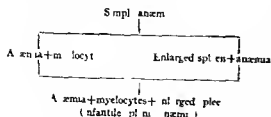
The clinical features are summarized as follows:  
1 The condition does not develop after the fourth year of life.

2 With anæmia the blood shows degenerate and embryonic red cells.

3 Myelocytes are present in the peripheral blood.

4 The spleen is enlarged.  
A number of toxic processes may give rise to the condition. Rickets although not the actual cause may predispose to it. Cases showing anæmia degenerating and embryonic forms of red cells and enlargement of the spleen but no myelocytes may be classified in the same group.

The possible sequences may be represented graphically thus:



The author concludes that infantile splenic anæmia is not a distinct entity but a form of simple secondary anæmia. MORRIS H. KAHN, M.D.

## MISCELLANEOUS

Hutchinson R, Fairbairn J S, Collier J and Others. Special Discussion on Chronic Abdominal Pain in Nervous Women. *Proc Roy Soc Med Lond* 1924 17: 31

HUTCHINSON states that the condition under discussion is difficult to define exactly but is characterized by abdominal aches and pains in dyspeptic constipated unmarried women who as a rule are mentally depressed. He discusses the responsibility of physical causes, hysteria and a subconscious desire for sympathy, the relation of the physical to the mental state and the treatment particularly ductless gland treatment and psychotherapy.

FAIRBAIRN adds to the groups of subjects childless married women and others with families but little income and considerable worry. In women the failure of reproduction may have a far reaching effect. Gynecological conditions are often present. Many of the women complaining of chronic abdominal pain have had much treatment which in numerous instances included several operations. Overworked mothers are others affected.

The pecky operations are of little value. Fairbairn believes that in the course of time colopexy will be abandoned. The position of the uterus may have little bearing on the general condition.

The best treatment is a change of environment and restoration of the woman's confidence in her body. In the early stages of the war women with this condition disappeared from the gynecologist's office because they had other things to occupy their minds.

COLLIER divides women with vague abdominal aches and pains into (1) those with hysteria (2) those with an insane delusion (3) those who are constantly apprehensive regarding their physical condition and (4) those with a true organic disease. The majority he believes belong to the last class. The hysterical have other stigmata of hysteria and can be permanently cured. Collier tells of a girl who caused herself to vomit blood by scratching the veins in her pharynx. When her habit was discovered she desisted and recovered.

In the other groups a physical defect is very apt to be the basis of the emotional instability.

MILLER states that besides the cases due to anatomical lesions there are those due to physical maladjustment. The amyotonic group of patients react well temporarily to rest, regulation of the diet and general treatment but may suffer a relapse. Many of them are operated upon without success. The calcium treatment of Vine and Groves and the use of parathyroid may be of some value. Miller has tried adrenal extract for patients with vagotonia but the results were poor. The sympathetico-tonic patients can be reached by mental treatment only.

SPRAGGS reports that of 988 women examined eighty-two complained of nervousness and abdominal pain. If the pain is a definite symptom there must be a true cause for it and this will be found sooner or later. Neurasthenia is a poor diagnosis.



Auto-intoxication is usually due to a definite mechanical or inflammatory cause. The obscure causes include in the eighty-two cases: biliary tract disease, renal calculus, esophagogastric stricture, inflamed duodenum, distended intestine, interstinct volvulus, blind pouches formed by an intestinal anastomosis, and pancreatitis. Gynecological conditions are often wrongly blamed for trouble due to some other cause. Colitis, constipation, or vasomotorosis may be responsible. In a few cases of constipation exclusion of the inactive portion of the large intestine is indicated. In the diagnosis of malposition the X-ray is of great aid.

CLEPIN says that from the psychopathological standpoint there are two factors in the symptoms under discussion: (1) bodily changes induced by emotion, and (2) the emotional changes induced by the symptoms. A continued emotional state induces changes in the abdominal viscera, which involve secretion, motility, and position. Even if it is impossible to cure the mental disturbance, it may be possible to force the symptoms back.

HADFIELD states that hysterical pains are not necessarily imaginary. They usually have an organic basis. Sexual factors are a common cause of hysteria. If hysterical pain may have as its basis craving for sympathy. In such cases the psychotherapist attempts to change the attitude of mind by psychological methods.

WILSON suggests that the colon is often at fault and that its treatment with antiseptics, etc., may prove of great benefit. Pain may be produced by the elastic spasm of the colon.

HORTON concludes that the mental as well as the physical side must be treated. Also that in some cases coloproctomy may be of value.

MARCEL L. HOBART, M.D.

DAVER, J. B. Focal Infection Within the Abdomen. *J. Surg. & Sy. M.* 4, 924, 1911.

That foci of infection occurring in the tonsils and sinuses, the teeth, the prostate, the deep urethra, the seminal vessels, and the fallopian tubes may lead to general disturbances has long been recognized. To these foci the abdominal surgeon adds the appendix, the gall bladder, and the bowel.

Chronic appendicitis is the most common surgical condition found in the abdomen. The chief symptoms are periodic pain in the right iliac fossa and tenderness. Cases with vasomotorosis and nervous instability are usually not surgical.

The appendix and gall bladder, which are sacs with only one opening, may be called the diverticula of the alimentary canal. The tissues of the appendix closely resemble those of the tonsils. Infection in the interstitial tissues of these organs is apt to persist.

Chronic colitis and occasionally mucous colitis may have their origin in continued infection in the appendix or gall bladder. Chronic pancreatitis also may be the result of an old chronic cholecystitis.

Appendicitis and cholecystitis may lead to cardiac disease. Lichty believes that in appendicitis

cardiac disease is functional while in cholecystitis a true myocarditis may result. In such cases removal of the appendix or gall bladder is necessary to relieve the cardiac condition.

Cholecystitis and appendicitis may lead also to colitis, synovitis, and arthritis. The author recommends a routine appendectomy and examination of the gall bladder in operations for peptic ulcer as he believes a chronically diseased appendix is often the focus from which peptic ulcers arise.

The bowel may act as a focus from which bacteria may enter the blood stream and form distant lesions. Usually constipation and stasis are best treated medically unless the cause is a kink or mechanical lesion.

In the differentiation of acute pyelitis from appendicitis or cholecystitis a careful urinalysis, cystoscopic examination, and X-ray examinations should be made. If then the diagnosis remains doubtful it is best to perform an appendectomy immediately under nitrous oxide-oxygen anesthesia.

The fallopian tubes are often the source of tuberculous peritonitis.

In conclusion DAVER urges that the same consideration be given abdominal foci of infection as is given the visible foci elsewhere.

J. M. A. H. M. A. O. V. D.

SCHUMANN, E. A. A Series of Cases Presenting Abdominal Tumors of Unusual Type Which Give Rise to Difficulties in Diagnosis. *S. G. A. J.* 19, 4, 185.

The first case reported was a case of desmoid of the lower abdominal wall on the left side. The mass was regular in outline, hard and dense, but not nodular. It was adherent to the rectus fascia but stripped easily from the external surface of the peritoneum.

In the second case the tumor was a bilateral sarcoma of the ovary and in the third an enlarged uterus containing a fetus acranium and a placenta with massive infarction.

Three cases were cases of labor following a previous cesarean section. In the first the indication was persistent uterine inertia, in the second central placenta previa, and in the third contracted pelvis. The author states that women who have been subjected to cesarean section should always be delivered in a hospital and should enter the hospital several days before the estimated date of delivery.

MORRIS L. KAHN, M.D.

DUVAL, P. and QUÉNU, J. Diaphragmatic Hernia on the Left Side Without Splenic Megacolon. Plicature and Diaphragmatic Fixation by the Thoraco-Abdominal Rupture (Contention diaphragmatique sans mégacolon splénique). *Bull. Soc. Chir. Paris* 1911, 4, 178.

The authors report a case of the curious condition which was first described by Petit in 1780 and has

been variously termed idiopathic superelevation of the diaphragm, relaxation of the diaphragm, diaphragmatic insufficiency and diaphragmatic eventration. Eventration of the diaphragm is an abnormal unilateral elevation of the diaphragmatic dome which permits ascent of the abdominal organs. The condition is rare. In 632 cases of diaphragmatic malformations Eppinger found 635 diaphragmatic herniæ but only seventeen eventrations.

The author's case was that of a man 45 years of age who complained of crises of pain in the left hypochondrium. Clinical examination revealed signs of pleurisy at the back, pneumothorax in the front and slight displacement of the heart to the right.

The syndrome suggested thoracic ectopia of the abdominal viscera. This was verified on roentgenological examination which showed the left side of the diaphragm elevated more than 10 cm. above the right side and immobile. The diagnosis was diaphragmatic eventration with dolichosigmoid and a tendency toward megacolon.

The treatment consisted in plication of the diaphragm by the thoraco-abdominal route. Artificial pneumothorax had failed to change the position of the diaphragm. Three folds were taken. Subsequent roentgenograms showed the elevation of the diaphragm reduced by 8 cm. and the heart in its

normal position. The patient is today in excellent health.

The author believes that in such cases operative interference is justified only when the condition causes respiratory, cardiac or digestive disturbances.

Of the seventeen cases of eventration reported in the literature, only one was treated directly that reported by Lerche in 1922. Lerche performed a plication through a laparotomy incision and it was because of the excellence of his result that the authors adopted this procedure in their case. However, the authors object to the use of the abdominal or thoracic route alone, believing that it is necessary to examine both surfaces of the diaphragm in order to determine their relation to the lungs and parietal pleura as well as to the superelevated abdominal viscera. The viscera must be dislodged and lowered by the surgeon's assistant in order that the muscle will be relatively flaccid and easy to fold and suture. Temporary paralysis of the diaphragm is not necessary.

The incision extends along the sixth intercostal space and descends almost vertically on the right side of the abdomen to the umbilicus. It is 30 cm. long, 20 cm. being on the thorax and 10 cm. on the abdomen. No section or resection of a rib is done.

W. A. BRENNAN

# GYNECOLOGY

## UTERUS

Begouin Statistics of Clinical Cures of Cancer of the Cervix of the Uterus Obtained with Radium (Statistiques de guérisons obtenues avec le radium dans le cancer du col utérin par le radium) *Bull et mem Soc Med Ch de Pa* 1914 1 140

Begouin has treated ninety five cases of cancer of the uterine cervix with radium alone. Sixty which have been under observation for a period of from one to five years are divided into three groups according to the stage of the disease in which the patient was first seen. The results of treatment are summarized as follows:

1. In nine advanced cases with an extensive tumor and metastases or severe cachexia there were no clinical cures.

2. In thirty six inoperable cases with fixation of the uterus but with only moderate extension of the condition there were twelve clinical cures (33 per cent).

3. In fifteen operable cases there were seven clinical cures (46 per cent).

In the last group there were nine cases in which it was doubtful whether operation was warranted. Of these only one was cured.

From this limited number of observations it appears that radium treatment is of no value in the advanced stages of the disease but when given during the operable period leads to a cure in a high percentage of cases and offers much hope to patients who have an early carcinoma but are rendered inoperable by cardiac, renal, pulmonary or other disease.

In the discussion of this paper Protosy and Begouin pointed out that injury to the bladder from the use of large doses of radium is infrequent and usually of little importance. The rectum and sigmoid colon however are often affected unfavorably. In one case laparotomy revealed a furrow in the sigmoid suggesting a furrow that would be made with a cautery and in another instance a thickening of the pelvic colon in the form of an inflammatory tumor. Pyometria was not observed.

REGAUD called attention to the fact that if a recurrence is to develop it usually appears within a period of a year. He reported that of thirteen patients treated in 1919 and judged cured in 1920 all were living in 1919 and twelve were alive in 1922. The technique used consisted in one application (or two separated by an interval of two months) of 80 mgm of radium divided between four tubes: two intra uterine and two vaginal and screened with rubber 2 mm of gold and 0.5 mm of platinum. The average duration of treatment was from two to four days.

ALFRED DEGAO, M.D.

Schmitz H. The Clinical Significance of Chemical and Serum Analyses of the Blood of Uterine Cancer Carriers Subjected to Measured Radiation Doses. *Am J Obst & Gy* 1914 40 449

Radiation sickness is caused by the absorption of antolytic products from the degenerated areas of the tumor mass. This intoxication is an example of a non specific reaction. After treatment with radium and the roentgen rays the sera of persons with carcinoma become carcinomalytic as evidenced by the Freund-Kaminer reaction.

The results of the chemical and serum examinations of the blood in cases of carcinoma indicate that persons with extensive and necrotic cancer tumors should be subjected to radiation therapy with great caution and that a fractional interval method should be employed to prevent severe radiation intoxication. Patients with advanced carcinomata should not be subjected to radiation therapy.

EDWARD L. COANELL, M.D.

## ADNEXAL AND PERIUTERINE CONDITIONS

Meaker S. R. Transuterine Insufflation of Gas. In the Investigation and Treatment of Sterility. *B to M & S J* 1914 10 286

The author believes that in 15 per cent of the cases of sterility in women the cause is an abnormality of the tubes. A method that has proved of great value in determining the patency of the tubes is transuterine insufflation. If this test is positive—that is if pneumoperitoneum can be produced by the transuterine route—it is conclusive evidence that at least one tube is patent. No positive information can be gained in regard to both tubes nor can it be demonstrated that the ciliated epithelium and the muscularis of the patent tube both of which are factors in the passage of the fertilized ovum are efficient. Negative results indicate definitely a tubal factor but do not give any information as to the exact location or the extent of the involvement.

Whether the test is to be checked by the X ray depends somewhat upon the circumstances of the particular case. A positive result is usually very convincing without the confirmatory evidence of roentgenograms. As a rule the author employs the X ray only for subsequent tests in doubtful cases.

When the X ray is to be employed a control plate should be made before the insufflation. Both this and the subsequent plate should be made with the patient in a position favorable for the passage of the intraperitoneal gas to the subdiaphragmatic region.

The author describes his technique and a simplified apparatus for transuterine insufflation. As the test is purely qualitative it is sufficient merely to estimate the quantity of gas used by the rate of

flow of the bubbles passing through the wash bottle

Emphasis is placed on the importance of beginning the flow of gas very slowly in order to obviate uterine colic which causes difficulty in forcing the gas through the interstitial part of the tubes. The rate of flow of the bubbles in the wash bottle should be at first one per second and one half minute should elapse before the pressure is allowed to rise as high as 100 mm Hg.

In positive cases there is usually a sharp drop from 60 to 100 mm down to from 20 to 30 mm. Other positive evidences are auscultatory signs and subjective symptoms.

When the tubes are occluded the pressure rises steadily and regurgitation of the gas finally occurs through the cervical canal. The pressure should not be allowed to exceed 200 mm. Pressure maintained at that level for three minutes without a spontaneous drop and without auscultatory signs or subjective symptoms proves the test negative.

A single negative test should not be accepted as final evidence of permanent occlusion of the tubes. The author advises against laparotomy until six careful insufflations have proved negative.

The value of transuterine insufflation as a therapeutic method in sterility has been definitely established. Its possibilities are especially great when the gas passes through with some difficulty. It is to be recommended also in the after treatment of cases in which salpingostomy has been done.

The incidence of ectopic pregnancy following transuterine insufflation has yet to be determined.

C. FISKE JOHNSON, M.D.

Schick, I. G. May the Corpus Luteum Be the Source of a Large Intraperitoneal Hemorrhage? (Le psgau peut-il étre la source d'hémorrhagie intrapéritéale?) *Obst. Gynec. J.* 1924, 9.

The author reports three cases in which a severe intraperitoneal hemorrhage followed rupture of the corpus luteum.

The first case was that of a para III 31 years of age who had an attack of severe pain in the lower abdomen which soon ceased but recurred after three days causing her to faint. Five days later she was admitted to the hospital with all the classical signs of intraperitoneal hemorrhage. At laparotomy a large quantity of blood was found in the abdomen. Both tubes were normal. The left ovary was larger than normal and showed a corpus luteum with a tear 1 cm long and 3 mm wide. The cavity of the corpus luteum was smooth. In microscopic examination showed it to be lined with luteal cells. There was no evidence of pregnancy.

The second case was that of a para III 40 years of age. Menstruation had been normal with the exception of the last few periods which were 5 days late. A sudden attack of syncope was followed by rapidly developing anemia. Three days after this attack the patient was taken to the hospital and operated upon immediately. Operation revealed

a large corpus luteum containing a small amount of reddish fluid and presenting a tear from 7 to 8 mm in length. The internal layer showed evidence of infiltration by red blood cells and corpus luteum cells. There were no signs of pregnancy.

The third case was that of a 45-year-old para III with placentomegaly. The patient was admitted to the hospital because of a loss of blood for eight days between her menstrual periods. On the day when her last menstrual period was expected she had an attack of pain in the lower part of the abdomen and nausea. The next day her general condition was good but subsequently she noticed enlargement of the abdomen and acceleration of the pulse. The diagnosis was intraperitoneal hemorrhage of unknown cause. Operation revealed on the surface of the left ovary a corpus luteum with a small tear from which blood was oozing. The tube and ovary on the left side were removed. The abdominal cavity contained a quantity of blood larger than that usually found in cases of ectopic pregnancy. The patient died. The spleen was found to weigh 200 gm. Microscopic examination of the removed ovary showed a somewhat cystic corpus luteum with good vascularization.

The author concludes that these cases prove both macroscopically and microscopically that rupture of a corpus luteum or corpus luteum cyst may cause extensive intraperitoneal hemorrhage. He agrees with Forssner that many of the forty cases of this type which have been reported in the literature were not proved cases as pregnancy was not definitely ruled out.

The article contains illustrations of the gross specimens and microscopic sections.

SALVATORE DE PALMA, M.D.

Herrmann, Keppel, G. L. A Hemorrhagic Form of Tuberculous Adnexitis (Le tubercule à forme hémorragique) *Gynec. Obst. J.* 1933, 11, 342.

The author reports two cases. The first was that of a woman 28 years old who had always had a slight leucorrhoea and when 16 years of age suffered an attack of serofibrinous pleurisy. Since marriage she had had eighteen abortions after from three to seven weeks of pregnancy. Five Wassermann examinations were negative. During a period of four years menstruation had been more abundant and the periods had increased in length from four or five to seven days. The blood was as bright red and contained clots 4 to 7 cm long. Bacteriological examination of the leucorrhoeal discharge which occurred between menstrual periods was negative for tubercle bacilli. General weakness developed gradually. Respiratory and circulatory functions remained normal. Cystoscopy showed slight bulbous edema in the region of the trigone. Vaginal examination was practically negative except for thickness in the right fornix. Rectal examination revealed tenderness in the region of the right adnexa. With a loss in weight of about 15 lb there was an

evening 1 s e the temperature from 38.2 to 38.5 degrees C

At operation the ovaries were found normal except for a slight sclerosis on the right side. The left tube was somewhat adherent but apparently normal. The right tube was somewhat enlarged, markedly congested and embolized in adhesions. At the isthmus was a nodule which seemed to be undergoing degeneration. A right salpingo-ophorectomy was performed and the abdomen closed in layers without drainage. Microscopic examination of the tube showed tubercle bacilli and a giant cell. The patient made an uneventful recovery and in the last four years has been free from symptoms.

The second case was that of a young unmarried woman with a definite history of tuberculosis in both her mother and her father's side of the family and a personal history of an attack of bronchopneumonia lasting for two and one-half months. After her psittacosis grippé or pulmonary affection her menstrual periods gradually increased from three to five to seven days; the menstrual blood contained clots and there was some loss of blood between the menstrual periods. Marked anemia resulted. Between the menstrual periods there was a slight leukorrheal discharge. The hymen being of the cribriform type vaginal examination was impossible. Upon rectal and abdominal examination the uterus was found small, soft, anteverted and only slightly mobile. The right fornix was thickened and slightly tender.

At laparotomy the appendix was found normal and the uterus small and soft. The right ovary also was normal but the right tube was somewhat enlarged and indurated and catheterization showed it to be closed. A few nodules were found. The appendix, right tube and right ovary were removed. Microscopic examination showed tuberculous salpingitis; the appendix and right ovary were normal.

S. L. VARTOFF, O. L. A. M. A. M. D.

### MISCELLANEOUS

Rosenblum P. and Bettman R. B. Acute Pelvic Abscess in Children. *Am J D Child* 1944, 33: 336.

The authors report three cases of pelvic abscess in children in which the symptom was relieved by drainage. In the first two cases drainage occurred spontaneously through the vagina. In the third case it was established by operation. The suppuration probably originated in the retroperitoneal structures and as glandular origin.

The frequent association of abdominal pain with throat infections in children may explain also the etiology of pelvic abscesses secondary to metastatic infection of lymph glands in the abdomen. In the cases reported the abscesses were not of pyogenic origin and there was no evidence of pyogenic abscess. All of the patients were females; the source of the infection may have been in the genitalia.

H. A. W. FINE, M. D.

Klein H. Comparative Examination of the Blood After Roentgen Irradiation and Vaginal Hysterectomy for Hemorrhages (Vergl. b. d. Blutunters. h. n. nach Roentgenkstr. u. v. d. vaginalen Uterus exstirpation). *Blut* 1923, 14: 5.

After calling attention to the differences in opinion expressed in the literature regarding the effect of roentgen irradiations upon the hematopoietic system which are largely attributable to differences in the technique used, the author reports the findings in twenty women between the ages of 40 and 50 years who were treated for hemorrhage by vaginal hysterectomy and twenty who were subjected to castration with the roentgen rays. The irradiation technique is not described. The blood was examined before and one day, fourteen days and ten weeks after the treatment.

Ten weeks after the operation the blood picture was normal in every case whereas ten weeks after the irradiation there was a distinct leukopenia (diminution by one-fifth) in eighteen of the twenty cases. In half of the cases the erythrocytes were also diminished in number on an average by one-ninth. In the majority of the cases the women recovered more slowly after the irradiation than after the operation.

REYN. (C)

Bonney V. Conservatism in Gynecological Surgery. *Pacific* 1944, 37.

Like fibroids and myeloma, although fibroid tumors are composed of tissue ordinarily as benign as that of lymphoma, the most common treatment is hysterectomy. If the same tumor were growing in the leg or arm, no surgeon would think of amputating the limb.

The basic principle of myomectomy—removal of all fibroids through an anterior incision—was laid down by Adams twenty-five years ago. Adams made the incision in the anterior wall of the uterus because he drained the cavity or cavities left by the enucleation and he wished to bring the drain out through the abdominal wall. Such drainage, however, is not necessary or desirable. An anterior incision is preferred today because it lies against the bladder rather than against the intestine and if any oozing occurs from the suture line the intestine will not adhere to it. Another advantage is that the suture line can be reinforced by fixing it to the abdominal wall by suturing it to the back of the bladder or by shortening the round ligaments so that they will keep it pressed up against the bladder.

The uterus may be conserved even when a large number of tumors are removed. The author has removed as many as thirty fibroids from one uterus. In his last 150 operations there were only two deaths. Both occurred early in the series and were due to faults of technique which he has since corrected. Many of his patients have borne children normally after the operation; from one of them he removed twenty-one fibroids only eighteen months before pregnancy.

Cases unsuitable for myomectomy are neglected cases in which there is anemia and those of elderly women.

In all women under 40 years of age myomectomy is to be preferred to hysterectomy unless there are definite contra indications. In cases of fibroids complicating pregnancy, conservation of the uterus is especially called for since the functional value of the organ is proved beyond a doubt. If the child is viable the fibroid should be removed through the incision by which the child is extracted. When the child is not viable it is sometimes possible to remove the tumor or tumors without interrupting the pregnancy but when they are deeply embedded it is best to proceed as if the child were viable and remove it with the growths.

*Conservation of the ovaries.* The ovaries should never be removed unless their retention means certain danger to life or health. Chocolate cysts when small strip out as easily as dermoid cysts. The author has enucleated them on many occasions and has not yet been obliged to operate for recurrence.

Removal of the ovaries to bring about an artificial menopause in cases of menorrhagia due to fibroid or fibrosis is no longer done but the pernicious principle has been revived in the X ray treatment of fibroids. In most cases given such X ray treatment the bleeding does not stop or it recurs and the tumor instead of shrinking continues to grow or undergoes acute degeneration or suppuration.

*Conservation of the tubes.* In the author's opinion tubes acutely inflamed usually remain permanently blocked distended and adherent. The policy of awaiting resolution results in many instances in the formation of double pyosalpinx with involvement of the ovaries. If the abdominal ostium is the only point of closure a new ostium can be fashioned by the operation of salpingostomy. A second operation is probably not worth while. Attempts to make a false passage by passing a piece of catgut from the tube into the uterus are almost certain to fail. The author has reimplanted the tube into the uterus but has never had a successful result from this procedure. CARL H. DAVIS, M.D.



hundred and eleven of the surviving 163 women returned for further study at the end of a year.

The findings clearly indicate that the late effects of eclampsia and more particularly of pre-eclamptic toxemia are more severe than is generally supposed. A four year study of all patients with late toxemia of pregnancy shows that physicians are not justified in assuming those who have suffered from eclampsia or pre-eclamptic toxemia that they may face future pregnancies without fear of toxic complications.

The length of time the toxic symptoms have persisted seems also to be a factor in determining the occurrence of permanent renal damage. This is of especial importance in the management of pre-eclamptic toxemia as many patients with this complication are kept at rest, placed upon a restricted diet and subjected to methods supposed to promote elimination and if urgent symptoms do not arise the treatment is often continued until term is reached and labor occurs spontaneously. That such a procedure results in a very low fetal mortality is proved by statistics but because of his experience the author believes it pertinent to inquire whether the chances of permanent renal injury may not be seriously increased by allowing the pregnancy to continue too long.

While eclampsia did not recur in the series of cases studied the fact that three of the twenty-seven eclamptic women who were seen one year later showed evidences of chronic nephritis indicates that the danger of permanent renal damage following eclampsia is not to be disregarded.

The danger of chronic nephritis following pre-eclamptic toxemia is unexpectedly great as shown by the fact that 60 per cent of the patients whose pregnancies were complicated by pre-eclamptic toxemia showed evidences of chronic renal disease when examined one year later.

The author is unable to differentiate between cases of pre-eclamptic toxemia which will be followed by chronic nephritis and those which will not result in permanent renal injury but believes it possible that the duration of the toxemia before delivery may be an important factor.

When in supposed cases of pre-eclamptic toxemia the evidences of the toxemia persist for three weeks or more after delivery Harris assumes that the underlying disease is of renal origin.

EDWARD L. CORVILL M.D.

Gordon O. A. Jr. The Management of Abortion  
*J. Am. M. A.* 1914 1: 121-10

The author reviews the management of 1528 cases of incomplete abortion.

In cases of threatened abortion uterine rest is necessary. This is given by absolute rest in bed and the administration of morphine. Upon admission to the hospital the patient should be prepared for labor. Vaginal examination is contra-indicated. The bowels should be kept open by daily low enemas.

In cases of inevitable abortion in which there is excessive hemorrhage or the products of gestation present at the os the vagina should be packed or

the partial products removed from the uterine cavity. Packing was done in 62 per cent of the cases reviewed by the author. Vaginal packing checks the hemorrhage by acting as a plug and by stimulating more powerful uterine contractions which aid in emptying the uterus. In all of the reviewed cases in which packing was done pituitary extract was given. The packing is removed after from eighteen to twenty-four hours. Usually the products of gestation came away with it. In 10 per cent a second packing was necessary. If the hemorrhage persists after the second packing instrumental evacuation of the uterus is indicated.

Septic cases should never be treated actively. In these hemorrhage is unusual because of the extensive thrombosis of the uterine and pelvic vessels. In the cases reviewed the patient was placed out of doors and in the Fowler position. Feeding was forced. In a few instances repeated small blood transfusions were given.

The mortality and morbidity of abortion are dependent upon the amount of intra-uterine intervention. Curettage changes many aseptic cases into septic cases.

HARRY W. FISK M.D.

## LABOR AND ITS COMPLICATIONS

Manton W. Dystocia Resulting from Pathology of the Soft Parts of the Generative Tract  
*J. Mich. G. State M. S.* 1914 11: 1-103

The author discusses congenital and acquired pathological entities according to their location classifying them as vulvar, vaginal, cervical, fundal and extrafundal. In many instances the abnormalities involve more than one of these areas.

Malignancy of the cervix complicating pregnancy is occasionally seen but as a rule malignancy hinders impregnation. In such cases labor should not be allowed to occur. In cases of inoperable malignancy the pregnancy should be allowed to progress in the interests of the child. During the early months an operable malignancy should be dealt with regardless of the child. In cases of operable malignancy discovered late in pregnancy the author does a Porro operation.

For cases of fibroids of the cervix and uterine body he urges watchful conservation but for those in which the tumors are softened or necrotic he advocates more radical measures. Operations for the removal of necrotic tumors of the fundus of the uterus should be performed before labor begins.

In conclusion Manton gives the following general rules for treatment:

1. All hollow or degenerated tumors and operable malignancies should be removed when diagnosed.
2. Women with one or more of the other lesions probably necessitating cesarean section may be allowed to go to term.
3. Simple vulvar and vaginal lesions should be taken care of during gestation.
4. In borderline cases a trial of labor may be given.

C. FISK JONES M.D.



Titus F. and Andrews V. L. I. Frozen Sections Through the Uterus of a Woman Dying During the Third Stage of Labor Illustrating the Mechanism of Placental Separation and Extrusion. II. Frozen Sections Through the Uterus of a Woman Dying from Central Placenta Praevia Following Braxton Hicks Version. *Am J Obst & Gynec* 924: 11396

The placental separation of Schultze in which the organ is inverted and extruded with the fetal surface first is caused mainly by uterine contractions during the third stage of labor which are comparable physiologically with those of the first and second stages.

The rôle played by the formation of a retroplacental hematoma in placental separation has been greatly overestimated. A central placenta praevia may cover a larger portion of the uterine surface than has been generally supposed. A comparatively small area of the placental detachment may cause serious and even fatal hemorrhage. The frozen sections of the uterus made by the authors demonstrated the already recognized fact that the combined external and internal version of Braxton Hicks is an efficient method of controlling hemorrhage from placenta praevia. EDWARD L. CARNELL, M.D.

McPherson R. The Treatment of Placenta Praevia. *Am J Obst & Gynec* 94: 43

In the last 501 cases treated at the New York Living In Hospital seventy mothers died a mortality of 13.9 per cent. The stillbirth mortality was about 42 per cent. These figures show a considerable improvement in the maternal mortality but only a very slight one in the infant mortality. Many of the children died within the first few days because of prematurity of the 501 infants 307 or more than half were premature. One hundred and seven children born alive (about 18 per cent) died before leaving the hospital a total fetal mortality of slightly over 60 per cent.

The preference in treatment was given to gauze packing followed in most instances by an internal podalic version. This was done in 314 of the 501 cases. There were thirty-four abdominal cesarean sections, two extraperitoneal cesarean sections, three vaginal hysterectomies, twenty Braxton Hicks operations, forty-three breech extractions and twenty-two craniotomies on dead children. The rest were forceps and normal deliveries.

Nothing has contributed more to a successful issue in placenta praevia as far as the mother is concerned than blood transfusion. Therefore in all cases the mother's blood group should be determined as soon as the diagnosis is established and a satisfactory donor should be held in readiness.

Treatment should be instituted immediately. It appears that if the cervix is undilated or only slightly dilated and if the woman is near term and has a living child an abdominal cesarean section rapidly performed by a competent operator offers the best solution for the mother and child. On the other hand if the child is dead or non-viable one of the

less drastic methods of delivery may be employed. Of the latter the author is inclined to favor tamponade with iodoform gauze strips. In practically all instances this will control the hemorrhage especially if the membranes are first ruptured. It stimulates labor pains causing dilatation of the cervix and remains in place until it is removed by the operator.

Care should be taken in handling the cervix as in these cases it is very friable and apt to tear. A tear favors hemorrhage and subsequent infection. The obstetrician should be prepared to give a transfusion at the time of delivery. If there is any doubt at all of its necessity it should be given without delay. Pituitrin and ergot may be used after delivery or a uterine packing to aid in contracting the uterus. EDWARD I. CORLELL, M.D.

Polak J. O. Is Cesarean Section Justifiable in Abnormal Placenta? *Am J Obst & Gynec* 924: 384

Clinical study of a large number of cases of abnormally placenta has shown that it is possible to differentiate between those that can be safely treated expectantly and those that require rapid intrapelvic delivery or section and hysterectomy. The treatment depends largely on the extent of the pathology. While today many cases of separation show irrefutable evidence of an associated toxemia there are others in which the condition cannot be attributed to this cause.

If the placenta separates completely retraction of the site may not take place as long as the uterine contents prevent diminution in the size of the uterus. Consequently instead of thickening the walls become thinner and more atonic as the bleeding from the placental site continues and the blood accumulates in the space between the membranes and the uterine walls increasing the size of the uterus. Hence continued intra-uterine bleeding as demonstrated clinically by an increase in the size of the uterus, a rising pulse rate, a persistent fall in the systolic blood pressure, a progressive drop in the hemoglobin percentage and increasing pallor. In such cases prompt surgical intervention with coincident blood transfusion is indicated.

Another typical syndrome which may be readily recognized is presented by the pregnant woman at or near term who after exertion or without appreciable muscular effort except perhaps a few uterine contractions is seized with cramp-like uterine pain, slight collapse evidenced by nausea, pallor, with perspiration about the lips, nose and forehead, lowering of the blood pressure and an increase in the pulse rate. On physical examination the uterus

is found tense and tender and may be asymmetrical if the blood has accumulated behind the placenta (accessory tumor). Vaginal bleeding may be apparent with the occurrence of pain or may be demonstrated only on vaginal examination with raising of the presenting part which liberates the accumulated blood clots.

A patient presenting this picture should be immediately transferred to the hospital and placed under observation. If the cervix is effaced or the patient is a multipara the membranes may be ruptured and the bulk of the uterine contents diminished. From  $\frac{1}{4}$  to  $\frac{1}{2}$  gr of morphine should be administered to relieve the shock and aid in the dilatation and a tight manly tailed abdominal binder applied from above downward to compress the uterine wall firmly against the fetal tampon. In addition the vagina should be firmly plugged with sterile gauze or cotton moistened with boroglycerid which will stimulate the uterine contraction and favor dilatation.

When there are signs of progressive intra uterine bleeding no infravaginal method of delivery is justifiable unless the cervix is already dilated. The author formerly delivered women in this condition by manual dilatation of the cervix the use of forceps and version but after the fetus as expelled they sometimes collapsed with a postpartum gush so torrential that it was uncontrollable.

To deliver a dead child the obstetrician is not justified in doing a caesarean section which will entail further shock and oozing unless he is prepared first to give a transfusion and then to prevent further blood loss by hysterectomy.

In the majority of tragic cases the unprepared cervix offers an obstacle to infrapelve delivery hence it has been the author's plan after first giving a transfusion to open the abdomen with a long median incision and evert the uterus. Inspection will immediately show whether it requires removal or can be safely left *in situ*. The apoplectic uterus shows numerous ecchymotic areas and fails to contract. As in the presence of such a condition the child is invariably dead Polak clamps both broad ligaments in order to control the uterine and ovarian blood supply before he incises the uterus this permits the performance of a bloodless supra cervical hysterectomy. On the other hand if there are fetal heart sounds if inspection of the uterus shows no intermuscular hemorrhages evidenced by ecchymotic areas under the perimetrium and if the uterus intermittently contracts hysterotomy in which an intra uterine pack is left within the cavity is a justifiable procedure.

EDWARD L. CORNELL M.D.

## PUERPERIUM AND ITS COMPLICATIONS

Lankford B. A Study of 300 Cases. Private Patients Six Weeks or Longer Postpartum with Reference to the Condition of the Pelvic Floor. Cervix and Fundus. *Am J Obst & Gynec* 924 75

In this study of the genital tract beginning from below the first note was made regarding the appearance of the vulva. In 115 cases they showed no gaping in 139 cases slight gaping and in forty six marked gaping. Slight gaping of the vulva seems to be normal in parous women and is not associated

with any uncomfortable symptoms *per se*. Beginning cystocele was found in twenty four cases beginning rectocele in ten cases and cystorectocele in twenty nine.

The next point noted was the tone and condition of the levator muscles. These were judged by their thickness passive resistance to two examining fingers and power of voluntary contraction. The levators were in excellent condition in 157 cases in fair condition in 102 and in poor condition in thirty six. From the study it appears that when the levators are thick and have a fair degree of passive resistance and when the voluntary contraction is excellent or fair there need be no fear of poor functional or anatomical results following labor as far as the pelvic floor is concerned. In the two other classes one may expect trouble and predict the need for reparative surgery in the near or not very distant future.

Cervical lacerations were described as follows: slight unilateral eighty cases deep unilateral thirty cases bilateral ninety nine cases stellate sixteen cases and no appreciable laceration seventy five cases. The cervix was at right angles to the vagina in 200 cases and in line with the vagina in ninety six.

The position of the fundus was classed under three heads: forward 175 cases mid position forty five cases backward or retroverted seventy nine cases. The size of the fundus was estimated as normal in 212 and as larger than normal in eighty five. The consistency was taken to be normal in 237 boggy in eighteen and tender in thirty five. The uterus was found to be mobile in 284 cases and immobile in eleven. When it was immobile the fundus was held back so tightly (probably by adhesions) that it could not be brought forward by a safe degree of force in the manipulation used or was so tender or so painful that it was deemed best not to persevere in the effort to replace it at that time.

EDWARD L. CORNELL M.D.

De Saint Blaise G. B. and Joanny J. The Treatment of Generalized Forms of Puerperal Infection. (*Le traitement des formes généralisées de l'infection puerpérale*) *G f l g e* 914 x 65

The treatment of puerperal infection has undergone considerable change during the last five years. Curettage is now very seldom performed and intra uterine injections have been practically abandoned because of the frequency with which they are followed by a reaction.

In a search made at the St. Antoine Maternity Hospital Paris for a simple method of treatment devoid of danger and requiring no special laboratory equipment neo arphenamine was given a trial. This article is based on the results in 268 cases in which it was used in a period of twenty months. It was found of value only in cases with symptoms of general infection. Peritonitis and vulvar infections with moderate fever were not benefited. The contra-

indications to the treatment are the usual ones for neoarsphenamine. Generally 0.50 gm was given every other day as long as the symptoms of infection persisted and about five injections were sufficient.

The mortality during the eight months in which arsenphenamine was used was distinctly lower than in former years from the standpoint of both the total number of fetuses and the total number of cases of infection.

The total mortality for the service over a four year period was as follows: 1920 0.43 per cent, 1921 0.41 per cent, 1922 0.27 per cent and 1923 0.04 per cent. The mortality in the cases of infection was 1920 8.09 per cent, 1921 4.5 per cent, 1922 2.8 per cent and 1923 (eight months) 0.50 per cent.

The influence of neoarsphenamine on the course of puerperal fever is due probably to a bactericidal action exerted particularly on the streptococcus. This hypothesis is strengthened by the reports of two American investigators Allison and Capri. Allison found that a 1:1000 solution of arsenphenamine exerted a bactericidal action on the streptococcus and that weaker solutions had an inhibitory effect. Capri reported six cases of malignant streptococcal endocarditis obtained by means of large doses of sodium cacodylate.

Abstract by Dr. C. O. R. M. D.

Piper F. B. The Treatment of Puerperal Septicæmia. *J. G. C. J. Am.* 1924, 7.

The author divides cases of puerperal infection into four groups:

1. Cases of puerperal infection. The essential cases in which a sudden rise in the temperature with the usually associated symptom occurs during the puerperium.

2. Cases of puerperal septicæmia. In this group are cases in which the evidence of infection is largely due to the absorption of the toxins of putrefactive bacteria.

3. Cases of puerperal sepsis. These are cases in which the infection beginning in the birth canal extends elsewhere by way of the lymph channels or the blood stream or by direct continuity.

4. Cases of puerperal septicæmia. In this group are cases of puerperal sepsis in which the microorganisms are demonstrated in the blood stream.

The clinical difference between septicæmia and local infection in the birth canal is that the former will clear up almost immediately after the establishment of drain age while the latter may persist for a long period. All cases of puerperal septicæmia are cases of puerperal sepsis but a localized infection of the birth canal is not sepsis nor is every case of sepsis necessarily a case of septicæmia. Septicæmia is a condition in which the bacteria multiply in the blood stream and increase rapidly in virulence.

In the treatment of cases of puerperal infection the first consideration is separation of the case from normal obstetrical cases. Fowler's position should be used to favor drainage. If this is not successful the author prescribes an intra uterine douche of

Lugol's solution, weak mercurchrome or modified Dakin's solution. The patient should be carefully watched for signs of blood stream infection. If these appear a blood culture should be made but except in very severe cases no intravenous treatment should be given until after a positive blood culture has been obtained. A positive culture usually shows hemolytic or non-hemolytic streptococci and possibly staphylococci.

The intravenous treatment consists in the injection of a 1 per cent solution of mercurchrome in distilled water. The initial dose is from 20 to 30 c.c.m. The maximum dose is 45 c.c.m. The initial dose is given as soon as a positive culture is obtained. The patient will usually react to this with a chill followed by a rise in the temperature, red-stained arterial evacuation, hematuria and the omission of red stained vomitus. The chief danger is damage to the kidneys.

After two or three days the patient has recovered from the reaction to the first injection and will be ready for another provided the urinary excretion has been properly maintained. After the second injection and its reaction there is usually improvement in the general condition. Localization of the infection must then be looked for in order that drainage may be established.

The author believes that the reaction following the injections is probably due to the destruction of the bacteria as it was noted that the reactive chill was usually absent when the blood culture was negative. The treatment of the reaction is symptomatic. Roscoe Jensen, M.D.

## NEWBORN

Condon A. Meningeal Hemorrhages in the Newborn and Their Remote Consequence. *Am. J. Dis. Child.* 1924, 22, 4, 33.

During birth hemorrhages may occur at different levels either within the nervous tissue itself or close to the cranium. In the latter case the blood may be located between the bone and its periosteum (cephalhematoma) between the periosteum and the dura or beneath the dura.

During a difficult labor the frequent changes in the shape of the head and the excessive tension over stretch the septa and cause tearing. The tears may be complete or incomplete, unilateral or bilateral. When the tentorium cerebelli is involved the tears usually found below its junction with the falx cerebelli. When the falx cerebelli is damaged the tears occur at the level of its middle two thirds.

Similar subdural hemorrhages may occur over the surface of the cerebral hemisphere during difficult labor. In cases of fetal pressure on them are particularly tense. As a rule they occur between the layers of the falx cerebelli but this is true less frequently than in cases in which the tentorium is involved. Occasionally they remain beneath the base of the brain. The pia and arachnoid seldom tears but when it does small hematomata are formed.

In considering the causes of meningeal hemorrhages it is extremely important to bear in mind the immediate and the predisposing factors. Infections and intoxications *in utero* may be directly responsible but the most frequent cause is trauma during confinement such as that resulting from extraction of the head last *forceps delivery* from a contracted pelvis or presentation of the face or forehead. With regard to breech presentation statistics show that tearing of the tentorium occurs in from 10 to 75 per cent of fetuses thus delivered. Holland believes that in such cases the condition of the tentorium is due to the endeavor to effect rapid delivery after version and that if breech delivery is properly managed there will not be sufficient intracranial tension to tear the tentorium.

Meningeal hemorrhage is more frequently suspected than actually determined during life. The condition may cause death within a few hours but if the infant survives it is in a state of apparent collapse with cyanosis a low temperature convulsions circulatory and respiratory disturbances various palsies and contractures. When the infant succeeds in overcoming the immediate effects of the bleeding the stormy symptoms gradually subside and the child enters into a chronic state of physical and mental inferiority with a crippled central nervous system. Diplegia hemiplegia spastic paraplegia contractures athetosis or choreiform movements convulsive phenomena amaurosis mental deficiency or debility of various degrees form a syndrome which may be elated with infantile encephalopathies. This large group includes of course mild cases and those in which the damage is profound. From the standpoint of intellectual development the child may be an idiot or an imbecile or may present only slight arrest of mental development. The outcome depends on the hemorrhage and on the rapidity with which the blood is removed.

The cause of meningeal hemorrhage is principally the tearing of the membranes due to their overstretching which leads to rupture of the blood vessels. To produce a tear there must be great cranial stress. Since the latter is frequently the result of protracted difficult labor with instrumental delivery the obstetrician should bear in mind that the force used in the application of the forceps must

not be excessive and must not be applied to the wrong diameter of the head as for example the anteroposterior diameter. In the latter case the vertical elongation of the head is particularly apt to cause overstretching and tearing of the meninges. Forceps are of value and in many instances have saved life but they have been responsible also for injuries to the fetus leading to consequences which had a direct bearing on the later physical and mental development of the child. The preventive aspect lies in the consideration of all forces apt to cause tearing of the meninges and blood vessel.

Cases of supratentorial hemorrhage at birth are characterized by a bulging fontanel and a group of nervous phenomena such as sleeplessness restlessness and convulsive seizures. Infratentorial hemorrhage cause depression apathy somnolence early cyanosis vasomotor and respiratory manifestations and rigidity of the neck muscles. Because of the anatomical differences respiratory and other bulbar disturbances will not be observed in supratentorial hemorrhage.

In cases of supratentorial hemorrhage cyanosis appears late and is not pronounced but in cases of infratentorial hemorrhage it appears early and is very pronounced in the former the anterior fontanel is bulging while in the latter it shows slow distention.

In infratentorial hemorrhage lumbar puncture may be of considerable benefit. Frequently the withdrawal of spinal fluid must be repeated. In supratentorial hemorrhage lumbar puncture is of little avail as the blood cannot reach the subarachnoid cavity easily. Operation is almost the only treatment. Early craniotomy is indicated. Favorable results can be expected only when operation is performed within a few days after birth. After the clot has produced damage to the cortical tissue no relief can be expected.

It seems logical to conclude that in all cases indicating increased intracranial pressure at birth lumbar puncture should be resorted to at once before a definite localizing diagnosis is made since in cases of infratentorial hemorrhage it is of definite therapeutic value and in cases of supratentorial hemorrhage it establishes the diagnosis promptly.

CARL H. DAVIS, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Collett A J Genito Suprarenal Syndrome (Suprarenal Virilism) In a Girl 1½ Years Old with Successful Operation Am J Dis Child 1921 i 394

The author reviews the literature beginning with two cases described by Hippocrates.

With Apert he distinguishes five types of hyperepinephry depending upon the age at which the condition appears. All are characterized by marked hypertrichosis excessive growth of fat in the early development of the body and disturbances of the genital functions.

Type 1 Hyperepinephry of the embryonal period. In the embryonal period the individual becomes a hermaphrodite internally female and externally masculine. There is marked hypertrichosis of the suprarenal glands.

Type 2 Hyperepinephry during the fetal period. In this type the anomaly is less pronounced but there is no doubt as to the sex. The clitoris is large the uterus and ovaries are atrophied and hypertrichosis is present. The hyperplasia of the suprarenal glands persists from the later period of fetal life.

Type 3 Hyperepinephry of the prepubertal period. In this type there is abnormal body development with puberty precocious hypertrichosis and partial hypertrichosis of the clitoris.

Type 4 Hyperepinephry of maturity. Menstruation stops and marked hypertrichosis and hypertrichosis are present.

Type 5 Hyperepinephry during the period just before and after the menopause. The clinical picture is indistinct. There is marked hypertrichosis with disturbance of the endocrine function and menstruation but without hypertrichosis.

It is generally believed that tumors of the suprarenal medulla are never as compressive as changes in the sex characteristics. Such changes are commonly attributed to hyperactivity of the cortex which is believed to govern the growth of the body and the development of the secondary sex characteristics.

The child whose case is reported by the author showed marked changes when next examined four teen months after the operation. Collett believes this to be the first case on record in which a child survived the removal of a tumor causing the genital suprarenal syndrome. The child's prospects of attaining a full age seem good. JOURN. O'NEILL M.D.

Wertz H O A Study of the Pelvis of the Double Kidney J Urol 1941 49

As a rule the single complete urological examination will show all abnormalities present but occa-

sionally a double ureter or a double kidney is overlooked. Of a series of thirty double kidneys seven were not recognized or were found only after repeated examinations. As a rule it was the caudal pelvis which was catheterized as the ureteral orifice occupied the area in which the single orifice is usually found. The cases reviewed by the author include also seven cases of bifid ureter the catheter entered the caudal pelvis in five.

Usually the caudal pelvis is the larger and more nearly approaches the single pelvis. The superior major calyx may or may not be present. The cephalic pelvis may consist of one major calyx with but one papilla or may resemble the pelvis of a normal kidney. In five of the cases reported the cephalic pelvis was equal to or better developed than the caudal pelvis. In one case it closely resembled the normal. It may pass upward and inward upward and laterally outward or downward and outward.

The pelvises of the double kidneys are always situated one above the other and are separated by kidney substance. A communication between the calyces is unusual. The cephalic pelvis is closer to the spine than is the caudal pelvis. Pios is rare.

In a study of bilateral pyelograms made in 111 cases of apparently single kidneys a marked uniformity of the two kidneys was found. In cases of bifid pelvises the uniformity was less marked. If only one pelvis is of a bifid kidney is injected an area of kidney substance greater than the apparent area drained by the calyces present suggests double kidney. A small pelvis in a rudimentary single kidney and an isolated dilated calyx which is not shown in the pyelogram may be confusing.

The article contains a number of pyelograms illustrating the various types of double pelvis.

C. W. D. PICKER, M.D.

Hinman F and Morrison D M A Comparative Study of the Circulatory Change in Hydro-nephrosis, Carcinoma, Tuberculosis and Polycystic Kidney Preliminary Report J Urol 1941 43

The material for study was obtained at operation and autopsy. The specimens were irrigated through the arteries with normal salt solution and then injected with a 60 per cent barium sulphate suspension in gelatin at a pressure of 250 mm Hg. After fixation in formalin the kidneys were stereoscopically examined and then sectioned on a sagittal plane. Care is necessary in the use of this method to avoid the production of changes suggestive of pathology. Material so treated may be submitted to routine pathological study.

Brief reference is made to the normal circulation in the human kidney in order that the pathological circulatory changes described may be properly appreciated. The principal branches of the renal artery divide in the sinus renalis into smaller branches which enter the parenchyma between the lobes of the kidney—the interlobar arteries. These pass up along the walls of the calyces and the sides of the pyramids to their bases and end by arching over as the arcuate arteries. Convergence of the interlobar arteries tends to form a dome over the base of each pyramid. From the convexity of this dome numerous fine branches—the interlobular arteries—are given off into the cortex. These vessels run parallel to each other and at right angles to the surface of the organ. From the concavity of the dome fine arterial radials—the arteriæ rectæ—descend between the tubules of the medulla. As the interlobular arteries are the parent vessels of the glomeruli the presence or absence of these vessels is an indication of the amount of functioning cortex that is present.

In uncomplicated hydronephrosis in man early pressure forces the apex of the pyramid back out of the pelvis. Later the pyramid becomes compressed on its base thereby increasing the parenchyma of the cortex. The blood vessel running in the same direction become shortened and tortuous. The arteriæ and venæ rectæ of the medulla suffer first and the interlobular vessel next. The peripheral glomeruli appear compressed whereas those situated more deeply become larger. As the medulla recedes before the distending pelvis the arteriæ rectæ are necessarily affected first and their glomeruli gradually yield.

As the calyces dilate the interlobar trunks and the arcuate vessels become stretched and the diameter of their lumen is diminished whereas the finer interlobular branches which pursue a course radial to the source of pressure soon pass in a stage of shortening to complete obstruction. By progressive dilatation the calyx becomes a thin dilated sac over and around which course attenuated and greatly lengthened interlobular and arcuate trunks the sole remnants of the vasculature of a renal lobe.

As a result of the reduction in calibre of the main trunks due partially to pressure but mainly to stretching the calibre is diminished in the blood supply to the cortex which produces a partial anaemia of the cortical parenchyma. This tends to lessen normal tissue tone and favors laxation and dilatation.

In calcareous tuberculous of the kidney dilatation occurs as the result of obstruction of a calyx the ureter or the pelvis. Accompanying the process of stentation is the factor of infection. The vessels in the immediate neighborhood of a tuberculous focus develop endarteritis obliterans which in the harsim sulphate preparations is evidenced by areas of non-injection. The more intimate changes produced by pathology in the vessel walls are masked if the picture passes from one of primary infection to that of secondary hydronephrosis.

With regard to the polycystic kidney the authors state that in the finer vascular arrangement the progressive cystic change causes an alteration of compression rather than displacement. The multiplicity and generalized distribution of the cysts prevent any marked deviation or displacement of the main renal vessels but subjects them to compression and elongation. In the interlobular branches compression is more marked. In the final stage no interlobular vessels describing a normal course can be identified. Coincidentally there is complete atrophy of the functioning tissue. In the polycystic kidney the fetal type of circulation is maintained a fact supporting the hypothesis that the condition is of embryonic origin.

H A FOWLER M D

J. H. P. and Hill J. H. Gonococcal Infection of the Kidney and Criteria for Its Diagnosis. *J. L. of 924 xi 177*

From the James Buchanan Brady Urological Institute the authors report a case of gonococcus infection of the kidney associated with blocking of the ureter and resulting hydronephrosis and hydro-ureter. Reference is made to the literature which contains the reports of twenty-eight cases in fifteen of these the diagnosis was based upon cultural study while in thirteen it was made from direct smears alone. The authors emphasize the point that such methods are inadequate for the accurate identification of the gonococcus and stress the necessity of differentiating the meningococcus gonococcus and micrococcus catarrhals.

The gonococcus may be identified by (1) its appearance in a Gram stained smear of the material from which it is isolated (2) its cultural characteristics (3) its biochemical reactions and (4) its immunological reactions. The first two constitute the presumptive evidence but one of the last two must be included for a positive differential identification. By cultural methods identification may be narrowed to the gonococcus the meningococcus and unknown neisseria. It should be noted in connection with cultural characteristics that growth on ordinary media without enrichment with body fluids may not be conclusive negative evidence in the identification of the gonococcus. Positive proof should be obtained by fermentation tests. With properly prepared media the fermentation of dextrose alone may be considered conclusive evidence that the organism in question is the gonococcus. The fermentation of both dextrose and maltose places the organism in the meningococcus group.

The case reported was that of a boy of 17 years who was admitted to the hospital with severe pain in the right side of the abdomen. Six weeks previously he had had an acute attack of gonorrhea. One week before his admission to the hospital he had occasional pains in the right lumbar region. The night before admission he suffered with increased abdominal pain nausea and vomiting. A



after such treatment the stone will pass spontaneously and operation will be unnecessary.

The two methods of treatment are cystoscopy and surgery. Atropine benzyl benzoate and large quantities of fluids should be given by mouth. Watchful waiting is contra-indicated. Large stones may be removed at once but the risk is minimized if the block can be passed and the tension relieved. If this cannot be done immediate operation is necessary.

BENJAMIN F. ROLLER, M.D.

Turley, L. A. and Steel, J. Multiple Villary Adenoma of the Kidney Cortex. *J. Am. M. A.* 1924 LXXXI 857

This article reports a case in which the kidney condition was that of chronic senile atrophy and villary adenoma. Both kidneys were smaller than normal and the surface of each was covered with small white spots immediately beneath the capsule which varied in size from that of a pin point to that of a pea.

The authors believe that these tumors arose from the glomeruli. They draw this conclusion because the general shape and appearance was that of a glomerulus, the tumors consisted of branching and anastomosing capillaries such as those seen in a normal glomerulus, there was a definite capsule around the structures, and in some cases there were atypical tubules leaving the structure which were representative of the proximal convoluted tubule leaving a normal glomerulus.

HARRY W. FLAGGEMEYER, M.D.

Eltorre, E. Ureteral Papillomatosis (Papillomatous ureteral). *Pol. I. Chir.* 1924 LXXXI 58

Eltorre reports a case of ureteral papillomatosis in a man 63 years of age. The chief symptom of the condition was intermittent hematuria. After a thorough urological examination a diagnosis of tumor of the right kidney was made and a nephrectomy was performed. On section of the removed kidney a pedunculated papilloma the size of a small nut was discovered in the lower part of the renal pelvis. The tumor was benign in appearance and did not penetrate the pelvic wall deeply.

The patient remained in good health for a time after the operation but ultimately the hematuria recurred. On cystoscopic examination the right ureter was found to be papillomatous. At a second operation the right ureter was removed almost entirely. Three months later diffuse papillomatosis was found in the bladder.

Microscopic examination of the removed papilloma revealed malignancy.

Eltorre concludes that if at nephrectomy the papilloma is found in the renal pelvis the ureter should be removed at the same operation. When the papilloma is in the ureter, iliac ureterectomy with nephrectomy is indicated. In cases of papillomatous changes in the bladder, radium therapy should be employed.

W. A. BRENNAN.

## BLADDER URETHRA AND PENIS

Fordyce, A. D. and Capon, V. B. Idiopathic Hypertrophy of the Bladder. *B. J. Child.* 1924 XXII

The case reported by the authors was that of a 12-year-old boy with enuresis night and day, lethargy, constipation and great thirst. The urine contained mucus resembling the white of an egg. The post-mortem examination revealed marked hypertrophy of the kidneys, ureters and bladder. The transitional epithelium of the bladder had been replaced by columnar epithelium. The authors believe that the hydronephrosis may have been caused by the excessive quantity of mucus and that the mucus may have been formed by the abnormal columnar epithelium.

THOMAS F. FINEGAN, M.D.

Wolferth, C. C. and Miller, T. G. Necrosis and Gangrene of the Urinary Bladder. Review of 153 Cases Including Nineteen Not Previously Reported. *Am. J. M. S.* 1924 CL 339

The authors state that necrosis of the urinary bladder is not as rare as might be assumed from the literature. The signs are hematuria, a fetid odor and the presence in the urine of bladder tissue or mucus. It may be impossible to empty the full bladder by catheterization and the flow of urine may be interrupted by plugging of the catheter by the exfoliated membrane. In the diagnosis the condition must be differentiated from pseudo-membranous cystitis.

Of 153 persons with this condition whose cases are reviewed by the authors, sixty-five lived and eighty-eight died. In four of the case reports the outcome is not stated.

In males, castration may be done if the general condition will allow it. In females a more conservative treatment may be given because of the shortness of the urethra.

In most cases the condition seems to be due to infection, circulatory disturbances, a chemical irritant.

THOMAS F. FINEGAN, M.D.

Lanman, T. H. Indications and Contra-Indications for Circumcision in Children. *B. J. M. & S. J.* 1924 C 68

The generally accepted indications for circumcision in the cases of young children are a long redundant foreskin, irritation about the genitals, balanitis, enuresis, masturbation and nervousness. A large foreskin, adhesions and phimosis are not absolute indications because the adhesions can be separated, the phimosis can be overcome by dilatation and the organ can be kept healthy by proper toilet. When the penis is very small and the supra-pubic fat pad very large, postoperative cleanliness is difficult, therefore the operation should be postponed. In cases which show irritation about the genitalia, circumcision is contra-indicated. The lesions are caused by the ammoniacal diaper and troublesome complications may follow ill-advised operation at best, the lesions will reappear. A true



the Mayo Clinic between 1901 and 1913 a mortality of 1.1 per cent. More than half of the subsequent deaths from this disease occur during the first year probably from a secondary meningitis which it was impossible to detect at the time of operation. Postoperative results in 90 per cent of the cases

**Roucaurol.** The Histological Diagnosis of Recovery from the Central Infection (L. Roucaurol, *Chirurgie*, 1921, 10, 101).

In a recent review of the current methods of the treatment of meningitis, Roucaurol concludes that the most in favor but it is necessary to take into consideration of a permanent focus. It is a third of the cases that have been observed in the spinal fluid.

If the germ is found in the culture tubes at the end of the first 48 hours its presence is not a reliable sign or even a reliable guide. On the other hand, the results are reliable. If the germ is not found either it was used or the test is then made again. Several series of the results may be observed before a sterile culture is obtained.

Staphylococcus may be found in the spinal fluid. In the spinal fluid, it is not a reliable sign of infection. It is a reliable sign of infection only if the patient is found to have a meningitis. It is a reliable sign of infection only if the patient is found to have a meningitis. It is a reliable sign of infection only if the patient is found to have a meningitis.

It is not at all to be pushed until there is complete disappearance of the bacteria and the end of the postoperative which in some cases are found in the spinal fluid.

Roucaurol has the results of cases shown that the prognosis with the meningitis or meningitis is a cure. The treatment is a direct surgery. The results are 100 per cent of apparently cured cases. This indicates the care that must be taken. In thirty cases the cultures were sterile after the first test treatment and in eleven after the second treatment.

During the current war the meningitis was found in a percentage of apparently cured cases. This increase may have been due to the interruption of the treatment during the last months of the war. The results in the cultural technique or particularly in the results of cases.

**Chute.** A. J. Dependent Drainage of the Peritoneal Resection. *J. A. M. A.* 1921, 1, 35.

In the described method of establishing dependent drainage of the peritoneal cavity a small incision is made on one side of the peritoneum in from the right iliac fossa and from the left iliac fossa. The lower border of the incision is a large curved clamp is introduced from above at the level of the base of the bladder. The incision is pulled back into the peritoneal cavity.

Dependent drainage is indicated in infectious diseases of the lower peritoneal tissue and is more effective than upward drainage.

Chute, A. J. M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Animal Infectious Myositis (Sull monite let  
U) Ch d o g n s i m o u e n t o 923 u 29

Myositis involves exclusively the fibers sheath and interstitial tissues of striated muscles. Acute myositis may be a secondary complication of typhoid fever or other infection or a primary condition the cause of which is not manifest because the organisms responsible come from a more or less distant focus. Polymyositis may be associated with cutaneous lesions, nerve lesions, vascular disturbances, articular rheumatism and alcoholism. Lorenz believes that all types of myositis are of bacterial origin and that in the non-suppurative forms the absence of pus is to be explained on the basis of the bactericidal action of the muscle juice or low virulence of the bacteria. Normal muscle tissue is strongly resistant to infection either because of its active and assimilative hemolytic processes or the action of the muscle lymph. This resistance may be broken down by deficient nutrition, disease of the nervous system, trauma, fatigue or exposure. Cold forced exercise, trauma etc. create an area of diminished resistance which constitutes a favorable medium for the growth of bacteria. Dorst found experimentally that forty times as many bacteria are required to infect an uninjured limb than are necessary to infect a traumatized one. Males are more often affected with myositis than females, probably because they are more often subject to muscle fatigue. The condition occurs also more frequently in the Japanese than in other races.

The portal of entry or primary focus may be so small as easily to escape careful search (acne, furuncle, eczema, a macroscopically healed scratch, slight inflammation of the tonsil, gastro-intestinal tract, respiratory tract, lymphatic glands, sinuses, middle ear etc.). Normal skin pores and sebaceous follicles contain staphylococci. In secondary myositis the portal of entry is very evident.

Myositis may be local or diffuse and its focus may be single or multiple. Acute primary myositis runs the course of an infectious disease. Usually it terminates in suppuration. Early in the condition there is pain. This is soon followed by swelling of the involved muscles, fever which may or may not be preceded by chills and a severe general reaction such as anorexia, headache, sweats, pain in the limbs and general weakness. In the suppurative stage the reaction may be more severe, being characterized by high fever, delirium, prostration, delirium and yellowing of the skin. The hard, hot, painful and swollen muscles strongly contract the limb into a characteristic posture. Movement is

limited and the skin is edematous. As suppuration develops the center fluctuates and spontaneous opening and discharge may result. Rarely the disease becomes cured without suppuration. Brunon distinguishes three types: (1) a malignant form with serious general symptoms, local muscle symptoms that may pass unobserved and death in several days; (2) an acute form lasting from seven to ten days with local disease, abscess formation, discharge and recovery; and (3) a subacute form with a local but no general reaction.

In purulent myositis there may be a large solitary abscess, disseminated abscesses or a diffuse purulent infiltration. Infection begins in the muscle fibers. These become swollen, pale pink and homogeneous and show fatty waxiness and hyaline degeneration which goes on to complete necrosis and dissolution of the fibers in the abscess. Ultimately the muscle fibers, sheath and interstitial tissue are all involved. In cases of recovery after mild inflammation, complete muscle regeneration and return of function result. After severe infection with marked destruction there is a connective tissue cicatrix which is depressed and adherent and limits function.

The diagnosis is based on the presence of an inflammatory swelling which corresponds to the shape of the involved muscle and upon the position of the limb due to contraction of the muscle. The prognosis depends upon the type of the disease. The treatment is surgical.

The author reports a case of subacute myositis of the rectus femoris muscle of the left thigh following a thorn prick of the left middle finger. The patient had also an old empyema scar. The infecting organism was the staphylococcus pyogenes citreus. Recovery followed operative drainage.

WALTER C. BURKET, M.D.

Cooperman, M.B. The Treatment of Acute Metastatic Arthritis. *U.S. J. & R. Co.* 1924, c. 1, 306.

Acute metastatic arthritis is usually secondary to a primary focus of infection in some other part of the body. The author emphasizes the fact that it is not a medical condition and that bony ankylosis will result in at least one joint unless the treatment is other than that usually given in cases of joint involvement. Bacteria or their toxins irritate the secretory layer of the capsule and produce a serous, serofibrinous or purulent effusion. In the fulminant types of arthritis there is rapid destruction of every element of the joint.

The treatment should consist in relieving the intra-articular tension by frequent aspiration and separating the articular surfaces by traction. The joints should be placed at rest during the inflam-

matory stages but subsequently active motion should be encouraged early. The debris in a joint that has undergone destruction should be removed. The author advises cleaning up the primary focus of infection and increasing the patient's resistance by means of a nutritious diet, medication and sunlight.

There should be no hesitancy in aspirating a joint if proper asepsis is obtained. The fluid may be aspirated as often as every three or four days and should be cultured.

When the effusion is thick and turbid it may be necessary to open and drain the joint and wash it out with normal saline solution. If puncture reveals pus the joint should be freely opened with wide incisions. Tubes should not be used as they cause irritation. Active and passive motion should be continued night and day.

In the forms of arthritis in which all of the structures of the joint and bones are involved the treatment should consist in exposure of the joint, curettage and fixation in plaster with weight extension.

In cases with acute metastatic arthritis in the hip joint are reported. In the first the patient recovered from a severe septic condition after operation. In the other the arthritis developed after an operation for acute mastoiditis and recovery resulted following the use of suitable weight extension. These are the cases which when improperly or inadequately treated result in bony ankylosis with flexion of the limbs and pathological dislocation of the hips.

In connection with the removal of infected foci in the treatment of acute infection arthritis the patient's resistance must be increased by careful pre-operative treatment. ROBERT LOEWEN, M.D.

Rubelska V. C.orrhoeal Tendency During the Puerperium (Te d agniti gno th m Woch f t t) C k d e r m t l 9 3 63

A 34 year old primigravida who has been married nine years had three attacks of eclampsia at the end of pregnancy. The blood pressure was 135 mm Hg and the urine showed an albumin content of 0.9 per cent. The Stroganoff treatment was instituted. During the night the temperature was 39.2 degrees C and in the morning there were urgent eclamptic symptoms. Labor as in lucid (rupture of the membranes, lacerations) and a child weighing 3200 gm delivered spontaneously. Ten hours after the delivery the patient's wrists and ankles became swollen and painful. There was no reaction to the injection of milk. Treatment with salicylates was also without effect. The temperature as moderately increased. Colicorrhea was suspected in spite of the absence of clinical symptoms in the genitalia. Gonococci were found in the lochia and in the contents of the swelling. Phlogeston injections caused no reaction. Recovery resulted only after intravenous injection of arthogen which caused a marked reaction.

The striking features in this case were the early onset after delivery, the absence of reaction to non-

specific proteins and the unusual localization of the infection in the tendon sheaths of the hands and feet. The rapid onset and localization may be explained by the assumption that as the result of the eclamptic attacks and the associated labor pains the gonococci were carried with placental cells from an old decidual endometritis through the lungs into the greater circulation and to less resistant parts of the body. This theory was favored by the high antepartum fever. The cases of Pery and Boursier and of Neuburger may be similarly explained. In the author's case the gonorrhoeal infection must have antedated the pregnancy by many years.

GROSS (G)

Kell H. A Clinical Study of the Mobility of the Human Spine, Its Extent and Its Clinical Importance. Arch S 5 19 4 viii 67

The author discusses the anatomy, development and mechanics of the spine, emphasizing particularly the action of the smaller muscles in relation to the vertebrae. He believes that these small muscles are very directly concerned in the production of scoliosis as he has found that when they are electrically stimulated they cause distortion of the spinal column.

Proof is offered that the lumbar region of the spine is more mobile than the dorsal region, this probably explaining why the former is more often the site of the primary scoliotic curve. Keller believes that correction of the curvature is best obtained by traction above and below with the patient in the supine position to relax the spinal musculature.

A good point in the article is the suggestion that the spinal muscles may be studied by electrical stimulation. BRYANMOORE H. MOORE, M.D.

Mathieu C. Et Cases of Acute Vertebral Osteomyelitis (O t e m y e l i t e g u e v r t b l & p p o d s ) R e d e h P a r 9 24 xl 56

During recent years Mathieu has seen four cases of vertebral osteomyelitis of adolescence, a condition which is relatively rare. One earlier case he reported previously.

Vertebral osteomyelitis (infectious spondylitis) is of two chief types: (1) the acute type of adolescence and (2) the subacute type which is usually the result of an infectious disease. Mathieu discusses only the first. Only about 100 cases have been reported in the literature to date. The condition occurs about the ossification centers during the growing period from the twelfth to the fifteenth year. Two thirds of the subjects are males. In one fourth of the cases there is a history of trauma. The exciting cause may vary. The lumbar region is involved most frequently (53 per cent of the cases) and next in the order named the dorsal, cervical, and sacral regions. One part of a vertebra may be involved alone. The condition tends to spread.

True gibbus such as that of Pott's disease does not occur because severe osteomyelitis rapidly

causes death but a kyphosis due to muscular contraction and a compensatory scoliosis are common. Vascular lesions and osteomyelitic abscesses are other common complications.

Death occurs in 46 per cent of the cases from invasion of the pleura or spinal canal by pus or from pyæmic infection. Recovery is usual in cases in which the lesion is superficial. When the lesion is on the body of the vertebra it is usually fatal.

The treatment is surgical. The author favors wide incision of osteomyelitic abscesses and trephination of the bone. Many surgeons hesitate to attack the vertebral bodies fearing infection of the spinal canal. Grisel who collected the reports of fifty-three operations for vertebral osteomyelitis found that in forty cases the intervention was confined to incision of the abscess. Mathieu believes that resection of the affected bone should always be attempted as this is the best method of preventing later complications and assuring adequate drainage. He therefore recommends (1) simple evacuation and curettage and (2) a transectomy or a costotransversectomy or a laminectomy.

Two of Mathieu's patients who had posterior osteomyelitis recovered one after vaccine therapy and the other after operation. Two who died had osteomyelitis of the body of a vertebra. One of the latter was operated upon and the other treated by drainage and vaccines. In those who recovered there are no signs of a recurrence.

W. A. BARRETT

#### Huddling H. W. Ventral Tumors of the Sacrum Surg. & Obst. 914, 22, 1938

Huddling reports a series of ventral tumors of the sacrum. These growths which are usually encapsulated and attached to the periosteum tend to erode the bone. Many of them arise from the remnants of the lower neural canal and the postanal gut.

Five patients with ependymal cell glioma were operated on at the Mayo Clinic. Their average age was 46 years. One patient was entirely well ten years after the operation and one showed improvement nineteen months afterward but complained of disturbance of function of the bladder and bowels. One died of recurrence nine years after the removal of the growth. An exploration was made in one case but it proved inoperable and the patient died fourteen months later of intestinal obstruction. One patient had a recurrence two years after the operation but was without discomfort.

Dermoids were removed in four instances. The average age of the patients was 30 years. Postoperative data were obtainable in three of these. Two patients were well—one a year after the operation and one eight years after the operation. In a recurrence five years after the removal of

were three patients with foreign body tumors. Their average age was 40 years. One was apparently well fifteen months after removal of the growth. Almost complete

recovery was reported by another ten years later. A third patient died after the operation.

Carcinoma was found in two instances. A 40-year-old patient who had an adenocarcinoma was practically well two years after the operation. A 40-year-old patient with a colloid carcinoma was markedly benefited by the removal of the growth.

Myxomata were removed in two cases. The condition of one patient aged 37 years was improved three years after the operation. The other patient aged 56 years died from recurrence one year later.

One patient aged 64 years who had a myosarcoma died from recurrence one year after the operation.

Another aged 30 years died from recurrence fifteen months after the removal of a sarcoma. The growth was composed of foreign body giant cells with mitosis. One patient had an inoperable basal cell epithelioma.

The most satisfactory treatment consists in the removal or scraping out of the tumor followed by extensive radium radiation.

#### Bowing H. H. Microscopically Proved Sarcoma of the Humerus Surg. & Obst. 914, 22, 1938

The case reported was that of a man aged 23 years who registered at the Mayo Clinic in November 1920 complaining of pain in the right shoulder which had developed following an injury two years previously and had been aggravated by further injury seven months previously. The clinical and roentgenological diagnosis was sarcoma and amputation was advised. On December 3, 1920, the tumor was incised and a large quantity of the tissue removed but the bleeding was so difficult to control that amputation appeared contraindicated and radiation therapy was advised. The microscopic diagnosis was median round-cell sarcoma.

During the following year the patient received about 57,000 mgm hrs of radium in the wound and over the upper arm. The treatments were given at intervals of about two months. At the same time X-ray treatment was given over the thoracic cavity although there was never any evidence of metastasis to the lungs. During the second year the management of the case was made more difficult by a dermatitis and a persistent discharging sinus but the former responded well to treatment and the latter was relieved somewhat by the removal of a sequestrum in August 1922. Thereafter the patient remained under observation, returning to the Clinic every two or three months.

In May 1923 he returned with an apparently non-traumatic fracture at the site of the draining area and in August a disarticulation amputation was done at the shoulder joint because of non-union and the development of an ulcer. The pathologic diagnosis then was mixed-cell sarcoma (perithelial arrangement) extensive involvement of the upper third of the humerus and complete destruction of bone. The suggestion was made that the change was due to differential growth brought about by the

matory stages but subsequently active motion should be encouraged early. The debris in a joint that has undergone destruction should be removed. The author advises cleaning up the primary focus of infection and increasing the patient's resistance by means of a nutritious diet, medication and sunlight.

There should be no hesitancy in aspirating a joint if proper asepsis is obtained. The fluid may be aspirated as often as every three or four days and should be cultured.

When the effusion is thick and turbid it may be necessary to open and drain the joint and wash it out with normal saline solution. If puncture reveals pus the joint should be freely opened with wide incision. Tubes should not be used as they cause irritation. Active and passive motion should be continued night and day.

In the forms of arthritis in which all of the structures of the joint and bones are involved the treatment should consist in exposure of the joint, curettage and fixation in plaster with eight extension.

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Rubcska V. Gonorrhoal Tendinitis During the Puertum (Fertilität) Zeit. g. r. h. m. Woche 11. C. d. d. m. l. 33. 03.

A 34 year old primigravida who had been married nine years had three attacks of ectompsia at the end of pregnancy. The blood pressure was 135 mm Hg and the urine showed an albumin content of 0.3 per cent. The Stroganoff treatment was instituted. During the night the temperature was 39.2 degrees C. and in the morning there were recurrent eclamptic symptoms. Labor was induced (rupture of the membranes). Laminaria and a child weighing 2200 gm delivered spontaneously. Forty hours after the delivery the patient's feet and ankles became swollen and painful. There was no reaction to the injection of milk. Treatment with salicylate was also without effect. The temperature was moderately increased. Gonorrhea was suspected in spite of the absence of clinical symptoms in the genitalia. Gonococci were found in the lochia and in the contents of the swabs. Phlogogan injections caused no reaction. Recovery resulted only after intravenous injections of arthigen which caused a marked reaction.

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GROSS (G)

Keller H. A Clinical Study of the Mobility of the Human Spine, Its Extent and Its Clinical Importance. J. Ch. S. E. 1924, 1: 617.

The author discusses the anatomy, development and mechanics of the spine, emphasizing particularly the action of the smaller muscles in relation to the vertebrae. He believes that these small muscles are very directly concerned in the production of scoliosis as he has found that when they are electrically stimulated they cause distortion of the spinal column.

Proof is offered that the lumbar region of the spine is more mobile than the dorsal region, thus probably explaining why the former is more often the site of the primary scoliotic curve. Keller believes that correction of the curvature is best obtained by traction above and below with the patient in the supine position to relax the spinal musculature.

A good point in the article is the suggestion that the spinal muscles may be studied by electrical stimulation. BRYAN, H. MOORE, MD.

Mathieu G. Five Cases of Acute Vertebral Osteomyelitis (Osteomyélite aiguë vertébrale) provença. d. 35 ans. R. d. h. Par. 1924, 21: 50.

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W. A. BREVIA.

#### Hundling H. W. Ventral Tumors of the Sacrum *Surg. Gyn. & Obst.* 10:3, xxviii, 1918

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During the following year the patient received about 57,000 mgm. hrs. of radium in the wound and on the upper arm. The treatments were given at intervals of about two months. At the same time a ray treatment was given over the thoracic cavity although there was never any evidence of metastasis to the lungs. During the second year the management of the case was made more difficult by a dermatitis and a persistent discharging sinus but the former responded well to treatment and the latter was relieved somewhat by the removal of a sequestrum in August, 1912. Thereafter the patient remained under observation, returning to the Clinic every two or three months.

In May, 1913, he returned with an apparently non-traumatic fracture at the site of the draining area and in August a disarticulation amputation was done at the shoulder joint because of non-union and the development of an ulcer. The pathologic diagnosis then was mixed cell sarcoma (epithelial arrangement) extensive involvement of the upper third of the humerus and complete destruction of bone. The suggestion was made that the change was due to differentiation brought about by the

radiation therapy Further X ray dosage was given over the shoulder and thoracic cavity Three years after his first registration the patient was in good health there was no evidence of metastasis and he apparently had prospects of long life

**Deniker and Mouchet The Syndrome of Volkmann's Ischemic Contracture Following an Injury of the Arm Without Fracture (Syndrome de rétraction en hémiq. de Volkmann à la suite d'un traumatisme du bras sans fracture) B R t m m S c not d c f 924 1 75**

A young woman had her left arm crushed up to the shoulder between two wheels of a machine A large hæmatoma resulted but there was no open wound or fracture The hæmatoma was evacuated by puncture and the arm treated by massage and warm baths At about the fifteenth day the third and fourth fingers became flexed spontaneously Continuous extension of these fingers was established by means of rubber bands with the hand and forearm immobilized in extension As the apparatus was poorly tolerated its removal was necessary Compression on the wrist and flatly extended hand was then instituted This resulted in progressive improvement The functional result is satisfactory but as the anatomical correction of the fingers is still incomplete treatment is being continued

Experience has shown that the results of operative attempts to correct Volkmann's contracture are rather mediocre and not permanent The best results are those obtained with treatment similar to that given by Deniker

An interesting fact demonstrated by the case reported in this article is that Volkmann's contracture may be caused by infiltration of blood in the muscles W. A. BRENNAN

**Henderson M S Osteochondromatosis of the Hip Joint M n s is Med 924 1 261**

Osteochondromatosis has been ascribed to infectious traumatic embryonic and neoplastic causes Most writers have been inclined to regard infection as of little importance Some of them however including Bolton Halsey Peichel and Hahn favor the infection theory Jones after reviewing the literature and the cases in the Mayo Clinic concluded that infection does not play a part of any consequence in the etiology Trauma has been stressed by certain writers (Hamphrey Davis Carothers Henderson and Fisher) as an etiological factor and in eight cases Jones found a definite history of trauma which in the majority preceded the discovery of the loose bodies by a long time

Whitlocke Lot H Henderson and Fisher emphasize the fact that all of the tissues involved in this process are developed by differentiation of the same mesenchymal tissue During development in the embryo some of these cells degenerate to form the joint cavity some differentiate to form the joint cartilage and some differentiate to form the synovial membrane This embryological theory is closely

allied to the neoplastic and must be accepted as a basis for a discussion of the latter

The loose bodies in osteochondromatosis may be formed in any portion of the synovial membrane They may begin as osteomata or chondromata The cartilage may be hyaline fibrous or calcified or a combination of these forms Bone in the loose bodies may be developed either directly from connective tissue by the membrane method or by preformation in the cartilage The most typical form is a spherical shell of bone surrounded by cartilage and fibrous tissue and filled with vascular fat and spurs of bone The bodies are at first attached by pedicles through which they obtain their blood supply As the result of the increase in their size and weight and the natural trauma associated with joint motion they finally break their pedicles wander and then as free loose bodies The question as to whether they receive sufficient nourishment from the synovial fluid to increase their size has not been definitely settled but the fact that on examination of a section of a free body the outer layer of cartilage is found in an excellent state of preservation on the nuclear stream well whereas deep in the body the cells show evidence of degeneration lends weight to the theory that they do receive their nourishment from this source It seems probable although it has not been proved that under these conditions cartilage may proliferate In the detached bodies the bone is invariably necrotic whereas in the attached bodies with a blood supply growing bone is found

The symptoms vary with the joint involved The author reports a case of osteochondromatosis of the hip in a boy 13 years of age whose general condition was good As there had been trauma when the patient was 6 years old and several times since trauma was undoubtedly an etiological factor Locking of the joint occurred By an anterior incision on thirty one loose bodies were removed An enlargement resembling an osteostoma could be felt anteriorly at the point where the synovial membrane was reflected from the anterior intertrochanteric line This appeared to be the main site of origin of the loose bodies but several were removed from the upper border of the acetabulum where the synovial membrane was reflected from the bone

In a footnote the author states that since he sent this article for publication he has operated on another patient with loose bodies in the hip removing by a posterior incision on twenty seven loose bodies fourteen of which were attached by pedicles and thirteen of which were free

**Richards T K Evaluation of the Posterior Cruciate Ligament of the Knee Joint J B E S 1 S 924 46**

The author reports a case in which a man while running injured his right knee when he suddenly twisted his body to the right when his foot was caught firmly in the ground The leg was held in flexion of 30 degrees but the tibia could be rotated inward and backward on the femur

The X ray showed an increase in separation between the tibia and femur and an irregular rectangular opening on the internal superior aspect of the intracondylar notch at the site of attachment of the posterior cruciate ligament.

The knee was completely extended after thirty six hours by the application of elastic bandages on a harness. A plaster cast holding the leg in hyperextension was left on for three weeks and after two months the patient was able to walk without a limp and without support. CHESTER C. GUY, M.D.

Morton D J Mechanism of the Normal Foot and  
of Flat Foot *J Bone Joint* 15 1 924 368

The most important factors in flat foot

1. Faulty posture of the os calcis and improper distribution of the body weight
2. Support of the weight by the plantar ligaments
3. Almost directly lateral movement
4. Bone changes

The treatment depends upon whether the condition is a functional or structural deformity.

Arch supports should be regarded as splints. As such they are of great value in the treatment of foot troubles but their prolonged use like the use of splints on any other part of the body leads to weakening of the structures because it supplants normal function restricts joint movement and compresses important plantar vessel and soft structures. Alternate hot and cold foot bath with massage is a very beneficial. In advanced cases of deformity, operation may be indicated but must be regarded as an extreme measure as many methods have been tried and discarded as unsatisfactory. Tenotomy of the tendon of Achilles is almost invariably indicated

The article contains sixteen illustrations.

Lecène P and Mouchet A The Tarsal Scaphoiditis of Young Children (Lésion phalangienne et tarsienne) *Bull Mem Soc Pediatr* 1943; 39: 43

The condition discussed by the authors was first described by Koehler in 1906.

On a low power microscopic examination of sections of the scaphoid removed at a reference level operated upon the cartilage appeared normal. In the medullary space of the proximal end of the bone were greatly enlarged and in part filled with a very soft uncalcified mass. The medullary tissue involved a zone of inflammation. On higher magnification the necrotic medullary nodule appeared to be composed of numerous polynuclear and mononuclear cells surrounding masses of cellular debris. The neighboring tissue is fibrous and well calcified.

In the authors opinion the condition is an attenuated form of typhoid with the formation of small nodules in the spleen. The excised calcification of the liver and the choleliths are characteristic of the typhoid picture they believe a reaction of defense of the biliary tissue.

**SURGERY OF THE BONES JOINTS  
MUSCLES TENDONS ETC**

**Haas S L.** The Importance of the Periosteum and the Endosteum in the Repair of Transplanted Bone *Arch Surg* 924 VII 535

The author gives an excellent review of the literature regarding the experimental work that has been done to determine the function of the periosteum in the repair and regeneration of bone and reports the results of his own experiments. In the latter a metacarpal bone was removed from a dog's paw fractured and then reimplanted in its normal bed or in muscle in some other part of the body. In one series the periosteum was removed in another the endosteum and in a third both the periosteum and the endosteum.

Union of the fragments occurred in some of the first and second series of animal but was not in variable. In the third series it occurred in none

Jaas concludes that the presence of the perio-  
teum or the endosteum is necessary for union. Interference  
with either reduces the chance of union and destruc-  
tion of both entirely prevents union.

BEVERIDGE H MOORE M D

Strunsky M. Adult Torticollis. Report of a Case  
J B & Jont S r 94 7 46f

The author emphasizes the fact that whereas in congenital torticollis in infants the results of operation are usually good in adults there may be a bony ankylosis of the cervical vertebrae after operation and the asymmetry of the face may remain uncorrected or may be exaggerated. Therefore in adults all contracted muscles and fasciae must be divided and stretched and the overcorrected position maintained until all tendency toward recurrence has been overcome.

CHRISTOPHER C. GUY, M.D.

Radulesco A D A New D...to commissural  
Operative Method of Treating Congenital  
Syndactyly in (Un nouveau procédé opératoire  
de syndactylie congénitale) Rev de orthop 33 493

Operative methods used to date for the treatment of syndactylism have the disadvantage that there is a tendency toward secondary coalescence of the fingers and insufficient nutrition of the autoplasmic skin flaps.

Radulesco describes his method of avoiding these mishaps. For the section of the dorsal flap the incision is begun in the immediate vicinity of the extremity of one finger carried parallel to the interdigital line as far as its middle point and then passed diagonally onto the back of the other finger to the vicinity of the interdigital fold. The inferior part of the incision recurring in a U on the back of the hand circumscribes the future interdigital commissure in such a way that the extremity ascends a little toward the base of the first finger.

For the palmar flap a similar incision is made on the other side of the hand.



After dissection of the flaps the fingers are separated by a longitudinal incision terminating at the level of the other interdigital fold.

Figure 3 shows the method of suturing

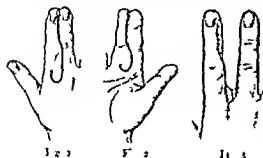


Fig. 1. In longitudinal incision. Fig. 2. Incision on the palm. Fig. 3. Method of suturing.

The bandaged hand is put in an electric thermophore at a constant temperature for at least forty-eight hours, the forearm being fixed in flexion on the arm. The dressing is renewed two days after the operation in order to determine the condition of the flaps and to remove the gauze compresses which become firm and hinder the circulation in the flaps by pressure.

The method gives a good skin covering of the interdigital fold, prevents recurrence, and assures a adequate nutrition of the flaps through their cross pedicles.

W. A. HARRIS, M.D.

Loett R. W. and Brewster A. H. Correction of Structural Lateral Curvature of the Spine. Preliminary Report on a Method of Treatment. *J. Am. Med. Assn.* 1924, 25, 1, 5.

This article deals with the treatment of structural scoliosis by a new method of using a plaster jacket. The old methods of treatment, such as gymnastic exercises and many others, or the use of jackets or apparatus alone, are considered as inefficient. The one which expends the force in pressing directly against the apex of the lateral curve, the keystone of the arch, are also long forgotten principles.

With their jacket the authors attempt to exert a corrective pressure on the curved spine so that the apex of the curve is spread, the apex of the curve being used as a point of resistance. The effect of the construction of the jacket in checked distraction or pulling apart is exerted on the spine at the point of greatest curvature.

The jacket fits very accurately and is applied from the axillae to the trochanters. Opposite the convexity of the lateral curve it is divided transversely. It is provided with a broad hinge on the convex side of the curve opposite the apex and a turnbuckle on the opposite side at the same level to provide the spreading force.

Because of the pressure this corrective jacket cannot be worn for much more than an hour at a time. Hence a second retention jacket, made on the same principle, is provided to be worn in the interim.

In some cases immediate correction and overcorrection with diminution of the rotation element can be obtained.

Presumably this method will not materially correct cases in which ankylosis has occurred. It is best in cases with a moderate curve in or below the mid-lumbar region.

HARRIS, C. SCHWAB, M.D.

Grantham S. A. A Method of Implanting the Bone Graft in the Spine. *J. Am. Med. Assn.* 1924, 25, 1, 107.

Grantham advocates a small transverse incision for the implantation of bone grafts into the spine. A special osteotomy is introduced to the level of the base of the spinous processes, and the latter are then sheared off. When the graft is placed in the tunnel thus formed, it is held by the lumbar dorsal fascia and muscles without fixation by foreign substances.

L. J. BRANN, M.D.

Dunn S. A. A Note on a Possible Sequel After Operation for the Removal of the Internal Semilunar Cartilage. *J. F. Orth. Med.* 1924, 1, 10, 1.

In the usual technique for the removal of the internal meniscus of the knee joint the patellar branch of the internal saphenous nerve is divided. As a rule, division of this nerve causes no untoward symptoms except a temporary loss of sensation in the infrapatellar region. However, in a small percentage of cases a painful neuroma may form in the scar and cause pain on flexion of the joint. Division of the car may be sufficient to cure this condition, but the most satisfactory treatment is excision of the scar and division of the nerve.

Neuroma of the internal saphenous nerve may explain certain cases of incomplete recovery after removal of the internal semilunar cartilage. The danger of this sequel may be obviated by retraction of the nerve or excision of its proximal portion at the time of operation.

D. L. R. LAYTON, M.D.

Stern W. C. Patellar palsy—An Operation for the Relief of Paralysis of the Knee. *J. B. & S. J.* 1924, 1, 459.

In the effort to provide substitute for the paralyzed quadriceps muscles the procedure has been used.

Operations to produce bony ankylosis. These are objectionable before puberty because of disturbance of growth.

Transplantation of the hamstrings into the patella. This requires strong hamstrings and a straight knee.

Supracondylar osteotomy of the femur and fixation of the lower fragment so that weight bearing will tend to ward hyperextension.

Conditions are ideal for tendon transplantation when there is a short strong tendon working on a short lever and not running through soft tissues. In Stern's method a vertical incision is made and the anterior surface of the patella is denuded down to the center of ossification. The patella is then rotated 180 degrees on its long axis so that its denuded surface fits into a bed prepared for it on the anterior surface of the femur. The leg is then placed in a cast in complete extension for three months and a caliper is worn for three months more.

Stern believes that the patella and its tendon will grow with the epiphysis. If it does not the tendency will be toward hyperextension which is not objectionable. This operation is indicated in cases of paralysis of the quadriceps, cases of inability to walk without braces or to hold the leg fully extended and cases in which transplantation of the hamstrings is unsuccessful or undesirable.

CHESTER C GUY, M.D.

Stuart F. W. Claw Foot—its Treatment. *J. Bone & Joint Surg.* 1924, 1: 160.

Examination of a series of cases showed that there are two definite types of claw foot: (1) that in which the first metatarsal head can be replaced and (2) that in which it cannot.

The condition of the tendon of Achilles is important. This tendon may be normal, contracted or lengthened. If it is lengthened which is sometimes the case because of a previous tenotomy, it allows the heel to drop, thus causing an increase in the height of the arch. In the earlier cases simple division of the plantar fascia and wrenching will be sufficient to reduce the deformity. In the later stages it is necessary to divide all structures down to the bone by Steindler's operation or one of its modifications.

An incision from 1 to 2 in. long is made on the inner side of the foot with its center opposite the inner tubercle of the os calcis. The skin and subcutaneous fat are then separated from the plantar fascia by dissection and a periosteal elevator is inserted into the wound until its curved end is felt to pass over the outer border of the foot. The plantar fascia muscles and periosteum are divided; the first will back on the tuberosity of the os calcis and the last close to its tubercles. The abductor hallucis is divided at its origin from the internal lateral ligament. All of the divided structures are then raised from the bone as far forward as the calcaneocuboid joint and the deformity is corrected with the hand or a wrench. The wound is sutured either before or after wrenching.

This operation has been done with satisfactory results but an equally satisfactory outcome has been obtained by a simultaneous division of all of the soft structures down to bone. The chief immediate advantage of Steindler's method lies in the fact that it is easier to wrench the foot afterward because of the separation of the structures from the skin, subcutaneous tissues and bone which cannot be obtained by dividing with a tenotomy. Care must be

taken not to place the wrench too tightly on the foot as this may cause serious injury to the tarsal bones. The wrench is sufficiently tight when the upper bar lies across the neck of the astragalus and the lower bar behind the first metatarsal head. It can be maintained there with the left hand placed on the upper bar. Downward pressure is made on the upper bar and upward pressure at the end of the handle. Overcorrection should be aimed at as the deformity tends to recur. If the toes are acutely flexed and the flexor tendons prevent their extension they should be tenotomized while the foot is held in the overcorrected position with the wrench. Elongation of the Achilles tendon at this stage is to be condemned as it practically undoes the straightening, that has been obtained and frequently ends in complete relapse. It must be borne in mind that we are dealing with contracted sole structures, not with contracted calf structures. The stretching of the tendon which occurs at the time of wrenching is sufficient. The tendon should be lengthened only as a last resort and when absolutely necessary.

The after treatment consists in allowing the patient to walk with the leg in plaster as soon as the pain has entirely disappeared. When the wound is healed after Steindler's operation this should be continued for two months. An ordinary shoe with a bar across the tread should then be worn and a removable plaster at night. Re-education of the muscles and massage with stretching of the plantar structures are essential for a good result.

In the second type of claw foot, that in which the heads of the metatarsals appear as a convex projection under the skin of the tread, attempts to flex the metatarsophalangeal joints produce severe pain. For this condition Stuart performs the following operation:

The mediatarsal joint is resected, the whole scaphoid is removed, the extensor proprius hallucis tendon is transplanted to the first metatarsal head and arthrodesis of the first interphalangeal joint is done. A curved incision is made on the outer side of the ankle and foot with its center opposite the neck of the astragalus and carried down to bone. An L-shaped incision is made over the first metatarsal head and the interphalangeal joint. The dorsal tissues including the skin, vessels, nerves and tendons are divided in a flap by dissection across the foot to its inner border. The mediatarsal and saphocuneiform joints are opened by division of the ligaments connecting them on their dorsal and inner aspects. The scaphoid is then removed completely by inserting under it a gouge which divides the plantar ligaments.

The head of the astragalus and the cuneiform bones are stripped of their cartilaginous surfaces with a thin shell of bone, their natural contour being preserved as much as possible. The same procedure is performed on the calcaneocuboid joints. If the plantar fascia still prevents proper alignment it is divided at this stage. An assistant then holds the foot in its new position while the cartilage is removed.

from the adjacent surfaces of the interphalangeal joint and the tendon of the long extensor of the great toe is passed through a tunnel made for it in the first metatarsal head. The wounds are then sutured and a small counter-opening is made below the angle of the larger for drainage.

A tourniquet applied during the operation is removed before the complete closure of the wound. If hemorrhage proves troublesome an injection of saline solution at a temperature of 120 degrees F is given. Dressings are applied and the foot is placed in a plaster cast with the toes straight. Windows are cut from the plaster cast over the wounds. Incisions are made on either side through the entire thickness of the cast to within a short distance of its extremities and the ankle joint. In this manner allowance is made for swelling and removal of the cast is facilitated.

At about the seventeenth day the plaster is changed to allow moulding of the foot if necessary. Walking in plaster is permitted at the end of six weeks and is continued for six months. An ordinary shoe with double iron may then be worn and re-education and massage of the muscles is begun. By the end of a year the iron is discarded.

S C WOLDE-BERG M D

## FRACTURES AND DISLOCATIONS

Rahn E. Fracture and Muscle (Finnish and Russian) *Arkiv för Kirurgi* 923 et seq.

The influence of the involved muscles on the healing of a fracture is a question as yet little investigated.

Electrical study of muscles in different types of fracture has shown that the muscle directly damaged by the injury exhibits at first diminished irritability and then increased irritability. The first stage which lasts about eight days is the so-called muscle stupor due to the pain reflexes. The stage of increased irritability lasts through the end of the fifth week. The irritation from the trauma and crushing of the muscle substance acts through the sensory nerves as a motor stimulus on the muscle. The first processes of fracture repair (capillary proliferation and union between the periosteum and musculature) can go on undisturbed during the period of muscle stupor while the reflexly determined muscle irritability which begins on the eighth day and continues for four weeks is present at the beginning and during the highest intensity of hyperemia and callus formation and constitutes an important stimulus. It was established further that paralysis of the muscles and artificial separation of the activated muscle from the sheath of periosteum inhibited the formation of callus by the periosteum.

On the basis of these findings it is evident that procedures which may damage the muscles directly involved in the healing of a fracture should be avoided as they will produce additional muscle stupor. Correct reduction should be effected at the first attempt. Large hematoma and fluids

injected to increase callus formation have an injurious effect when they intervene as a separating layer between muscle and periosteum. The muscle should be stimulated early by such procedures as intervention passive extension and stretching and later active movements. For cases in which open reduction is necessary Rehn's operation is performed soon after the disappearance of the muscle stupor. After separation of the muscle from the periosteum hemostasis must be effected carefully. Procedures that separate muscle and periosteum such as wiring and the screwing on of plates should be avoided.

Segments of bone which offer broad areas for the attachment of muscles are factors favoring healing. Portions of bone that are subjected to the strain of tendons incline toward the formation of pseudarthroses.

VOLLHARDT (Z)

Smith M K. The Prognosis in Epiphyseal Line Fractures. *American Journal of Orthopedics* 273.

Epiphyseal fractures are common but are often mistaken for ordinary fractures or if very slight for sprains. Deformity frequently results because of premature ossification of the epiphyseal line which when solid stops the growth of the bone. Injury to the shaft however stimulates growth thus explaining the increase in the length of a short leg after fracture with shortening.

Smith's article is based on a study of thirty three fractures: lower radius twelve, lower humeral ten, lower tibia four, upper humeral three, ulnar two, metacarpal two.

Five cases of lower radial fracture showed shortening three with premature ossification. In only one was the disability sufficient to warrant classification as poor. In this case beginning ossification was noticed eight months after the injury and there was 3 inches of shortening. In four other cases the shortening ranged from 3/4 to 1 inch but the wrist had good function. In seven cases there was no shortening and function was excellent. The extent of the injury as shown by the original deformity does not seem to be any criterion as to the end result. In two of the cases with shortening the original separation was so slight that reduction was not necessary. In none was there injury to both sides but with epiphyseal displacement on one side only the result after three years was shortening on the side without displacement and a normal wrist on the other side.

Reduction should be done of course if the injury is recent but seems to be no guarantee of a good late result. The age of the five patients with wrist injuries with shortening averaged 16 years while those of the seven patients with ulnar injuries without shortening averaged 13 years. It all seems from this that the chance of a poor result becomes greater the nearer the age of epiphyseal union to the shaft is approached.

Of four cases with epiphyseal fracture at the lower end of the tibia two showed retarded growth and

none premature ossification. Three cases of upper humeral fractures are reported. One that of a 16 year-old patient required open operation for reduction and at the end of two years showed normal function except for slight limitation of internal rotation. In the two others there was recovery with good function but in one there was slight shortening.

Of the total number of cases except the lower humeral fractures (twenty-one in all) seven showed retarded growth and four showed premature ossification. There were ten cases of lower humeral fracture. One showed premature ossification after two years but good function. In another case ossification seemed to have been hastened by the injury. Another showed in of lengthening on the injured side and gunstock deformity but good function. In all of the rest the results are excellent.

On the whole there seems to be a tendency to natural correction after unfractured epiphyseal separations. Retardation of growth is seldom compensated later.

WILLIAM A. CLARK, M.D.

**Fairchild F. R. Some Practical Suggestions in the Treatment of Fractures of the Forearm and Wrist.**  
924 N. 133

Every fracture presents a problem in itself and its relation with the aid of the X-ray is a matter necessitating the use of common sense, the application of mechanical principles, and the careful choice of the method of effecting reduction in accordance with the requirements of the particular case. At the head of the list of practical appliances in fracture work is the Thomas splint. This must be carefully fitted. The shafts should be made of steel or iron which is strong yet malleable. This splint is the most satisfactory appliance for the correction and fixation of fracture of the forearm. It permits movement of the limb, access to the wound, and X-ray examination. Continuous traction is best made by means of moleskin tape applied directly to the skin.

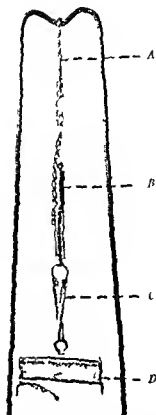
In cases of ununited fractures in which osteogenesis is functionally arrested, the use of the graft gives the best results. When the exposed soft tissues are repairable for non-union, the metal plate or foreign material is not in them, but by its use. In cases of fracture of the radius or ulna, the forearm flexion and extension under anesthesia are necessary for a successful reduction. If these are not obtainable, open operation for the reattachment of the fragments is indicated.

C. T. RICE, M.D.

**White J. W. Intraleg Splint Traction. Report of 57 Cases.**

The advantages of the plantar flexion splint for facilitating maintenance of a desired position for the foot in a treatment of the calcaneal fracture are applicable in adjustment and transportation.

The traction is produced and applied within the limit of the splint. The basis of the apparatus is a Thomas leg splint or some modification of it. It



should be long enough for at least 2 ft. between its distal tip and the apparatus fixed to the extremity. The pull is exerted and maintained by three elements arranged in series, one end of which is applied to the distal extremity of the splint and the other end to the apparatus attached to the limb.

The proximal element in the series is a bunch of rubber bands. To these is fastened a spring balance with a capacity of 25 lb. and to the other end of the spring is hooked a metal chain of the type now used in heavy winches. The chain passes over the distal end of the splint and is hooked back on the cable. The combination of bands and spring makes possible a given traction for an indefinite period.

The leg is supported by the usual transverse slings attached to the bars of the splint, which itself is supported by some form of adjustable upright fixed to the foot of the bed or the Bradford frame. It

pressure on the ischial tuberosity becomes unbearable the foot of the bed may be elevated.

The apparatus is very efficient. It exerts sufficient measurable force to prevent overriding or separation of the fragments. J. W. STRECHER, M.D.

Davidson C. and Chrichtopher F.: The Use of Boiled Beef Bone Intramedullary Pegs in the Fractures of Long Bones. An Experimental Study. *S. S. Gyn. & Obst.* 1924, 2, 11, 334.

In the hope that further light might be shed upon the desirability or undesirability of the use of boiled beef bone as an internal splint in fractures a study was made of the fate of the intramedullary boiled beef bone peg in recent fractures in dogs.

A standard operation was determined upon. With the exception of the first few the operations were done under the most favorable circumstances. A hospital room with a full complement of internes and nurses was placed at the authors' disposal and the technique used was the same as that employed for human beings.

After the animal had been completely anesthetized with ether the upper part of the foreleg and the shoulder were widely shaved and dried with alcohol and ether and painted with full strength tincture of iodine. The animal was then draped. A longitudinal incision was made over the upper part of the foreleg and the muscles were retracted with care not to injure the musculospiral nerve.

After the humerus had been exposed for a distance of 2 or 3 cm. a Gigli saw was passed under it and the bone was sawed through at right angles to its axis. The two sawed ends of the humerus were then brought up into the wound and the marrow cavity was lightly curetted out. The beef bone peg used had to be boiled for at least two hours and was of a size to fit tightly into the marrow cavity. In the latter two thirds of the experiments it was thought best to use rectangular pegs in the round medullary cavity. When this was done there were four points of contact between the peg and the internal circumference of the bone and the intervening areas of the endosteum were not subject to pressure.

The length of each peg was at least twice the width of the bone into which it was inserted. After both fragments had been slipped over the peg an approximated the fracture line bone was held together tightly the muscles and subcutaneous tissue were approximated and the skin was carefully closed.

Collodion was painted over the wound and after a dressing was applied a snug plaster cast was put on to include the neck, the shoulder, the back and the entire foreleg except the paw. The casts were generally removed at the eighth week and at the desired dates the animals were killed with ether.

Thirty animals were operated upon. The results are shown in roentgenograms and photomicrographs. The authors' conclusions are as follows:

1. The part of the boiled beef bone peg which remains in aseptic contact with the endosteum

of its host surrounded by living bone becomes solidly embedded in new bone undergoes gradual absorption and is replaced by new living bone which is in turn absorbed later.

2. The part of the beef bone which lies between the fragments but is not protected by endosteum and is not covered by living bone undergoes rapid absorption and disintegration and is not replaced by living bone even when its surroundings are aseptic.

3. When one end of the beef bone peg is not fixed in stable contact with the endosteum but remains in position there is absorption of both the peg and the surrounding live bone.

4. When the mechanical fixation holds and is aseptic the internal callus is limited by the beef bone peg and does not bridge the line of fracture. The external callus is markedly lessened. The permanent or definitive callus is inhibited.

5. The series of experiments reported did not produce a single successful anatomical and functional result.

6. The causes of failure were (1) infection (2) disengagement of the peg due to (a) failure in the mechanical reduction (b) lack of continued immobilization and (c) loosening of the repair by absorption of the peg and surrounding live bone (3) integration of the peg from absorption of the line of fracture.

A repair apparently mechanically perfect showed a good result as long as the peg remained strong enough to sustain the bone. When disintegration of the peg occurred at the line of fracture a point of mobility was found.

The end results were either permanent non union or lateral union usually in malposition.

Oudard: Recurrent Antero-Internal Dislocation of the Shoulder (La lésion récidivante de l'épaule variété antéro-interne). *J. d'Ch.* 1924, 22, 13.

To prevent recurrence of antero-internal dislocation of the shoulder it is necessary to correct the laxity of the joint by capsulorrhaphy and to form a bone stop on the humeral head. Some action must be taken also with regard to the subscapular muscle which has an important part in the retention of the humeral head. To approach the muscle the deltoid must be cut 1 cm. below its clavicular insertion. It is necessary also to lower the coracobiceps and pectoralis minor muscles by sectioning the summit of the coracoid process. When the muscles and the vasculonerve plexus are turned back the subscapular muscle is widely exposed.

In order to create a bone stop a graft is interposed between the base and the summit of the coracoid process. By means of a graft 3 or 4 cm. in length the coracoid process will be sufficiently elongated to oppose any forward projection of the humeral head. The graft will withstand violent movements and the lowering of the muscles will not create any inconvenience.



Fig 1



Fig 2



Fig 3

Fig 1 The shoulder dislocation with the coracoclavicular ligament torn. D = deltoid, C = clavicle, G = glenoid, P = pectoralis major, L = latissimus, S = subscapularis, T = triceps.

Fig 2 The closed shoulder joint with the subscapularis muscle sutured to the coracoclavicular ligament.

Fig 3 The shoulder dislocation with the coracoclavicular ligament torn. B = base of the coracoclavicular ligament, L = latissimus, S = subscapularis, T = triceps.

Fig 3 Graft interposition between the base of the coracoclavicular ligament and the subscapularis muscle will be surrounded by soft periosteal grafts.

(O'Dell, R. C. *Recent Advances in Internal Dislocation of the Shoulder*)

The author claims that the results of this method are considerably better than those obtained by others.

W. A. BRENNAN

#### Schlaepfer A. Uncomplicated Dislocations of the Shoulder. Their Rational Treatment and Late Results. *Am J Med Sci* 1944; 114: 44

This article is based on experience in the treatment of dislocations of the shoulder at the Surgical Clinic in Zurich, Switzerland, during the last twenty years.

Shoulder dislocations constitute 52 per cent of all joint dislocations and occur most frequently in middle age and more often in males than in females. In the 120 cases reviewed the dislocation was anterior in 94 per cent and the most common anterior dislocation was of the subcoracoid type.

Nerve injuries occur in about 4 per cent of cases. Kroeber used the Schinzinger method with the Kocher modification. The latter became the routine procedure of Sauerbruch. As a rule no anesthesia is required. Kauffman found general anesthesia necessary in only 1 per cent of 300 cases treated by the Kocher method. Kroeber immobilized the arm in a sling for from one to two weeks and then instituted daily massage and traction. Sauerbruch shortened the period of immobilization to a few days. In the cases reviewed by the author the time necessary for healing was about thirty days. In 184 uncomplicated cases studied by Gubler the patients were able to resume their previous occupations without any complaint in about thirty-eight days.

Marbaix compiled statistics which showed clearly the effects of immobilization. While they were carefully compiled and are thoroughly convincing, his method has not been generally accepted, probably

because it is regarded as too drastic after such a severe injury.

The author concludes that no bandage should be applied following Kocher reduction and that active and passive motion should be begun immediately. In 157 cases treated in this manner the dislocation did not recur. Complete cure should be obtained in from fourteen to eighteen days. In neglected cases reduction is possible even after a period of weeks, but Funk found that after nine weeks it could be accomplished only by open methods. In the author's experience delay in reduction always resulted in permanent impairment of function.

ROBERT V. FUSTEN, M.D.

#### Thiery P. The Functional End Result of an Unreduced Dislocation of the Shoulder. (*Résultat fonctionnel d'une luxation de l'épaule non réduite*). *Bull et Mem Soc nat d'Chir* 1944; 160

In the case reported that of a man 62 years of age the right shoulder was dislocated in 1915 and either not reduced at that time or subsequently re-dislocated. The condition caused arthritis and marked crepitation. Five months later the patient was able to resume light work. Six months after the injury he was working as before the accident. At the present time the movements of the arm show considerable amplitude: outward rotation is limited to one third the normal, but the arm can be easily elevated and placed in abduction up to the horizontal position. Circumductive movements are free.

Thiery remarks that if he had treated this patient surgically he would doubtless have attributed such a remarkable functional result to the operation. In conclusion he calls attention to the fact that

operative attempts at reposition in cases of old dislocations are often unsuccessful and that resection of the humeral head which may be necessary for operative reduction in such cases is frequently followed by serious functional disturbances

W. A. BRENNAN

**Ellison E. L. and Hinton D. Complicated Fractures of the Surgical Neck of the Humerus**  
Surg Clin N Am 92:4 19 99

In two of the six cases reported open reduction was resorted to because of poor coaptation of the fragments due to the interposition of soft parts and bone fragments. In both metal plates were used. The authors emphasize the importance of fitting the screws snugly into the bone. They make the incision over the lower end of the upper fragment and after effecting reduction place the arm in a position of equilibrium in which muscle strain is minimized during immobilization. Iodine gut is used to close the skin a small rubber tube with a silk thread pilot being left in the lower angle of the incision. The thread is brought out through the dressings so that by pulling on it the drain may be removed after forty-eight hours without disturbing the dressings. The wound then needs no further attention until the arm is removed from the cast. In the two cases under discussion the arm was put up in abduction on a triangular splint and union and function were good after four months. The plates were not removed.

In two other cases the fracture was complicated by subcoracoid dislocation of the head of the humerus. In one case reduction as effected by lateral traction on the arm and upward pressure between the chest and the dislocated head. In the other case attempts at manipulation and reduction of the dislocation were unsuccessful and open operation was contra-indicated by the patient's general condition but after six months the function of the arm was 60 per cent normal and the pain was gradually diminishing.

In one case that of a girl of 11 years there was separation of the shaft from the head at the epiphyseal line. Reduction was accomplished by strong traction with the arm in complete abduction i.e. up beside the head and countertraction made by the surgeon's foot in the hollow of the neck. The arm was dressed bound to the side with the forearm slung at the wrist. The curve in this epiphyseal line in early life makes reduction of such an injury more easily maintained in the cases of children. In later life when the bone is transverse it is sometimes necessary to dress the arm in complete right angle abduction.

In the sixth case cited there was comminution of the head of the humerus. The authors were able to mold the fragments together and to restore the contour of the shoulder. A complete functional recovery resulted.

All of these reductions were effected under general anesthesia and on the fluoroscopic table.

The most common error in the diagnosis was suspecting a dislocation. The arms which were not put up on a triangular splint in abduction were dressed at the side of the chest with a wedge shaped auxiliary pad. The authors emphasize the importance of preventing motion at the fracture site by immobilizing the forearm against the body. During convalescence painful passive motion was not used. Active motion and massage were followed by perfect results in every instance except the case of fracture dislocation given palliative treatment.

CHESTER C. CUY M.D.

**Taddei D. The Treatment of Fractures of the Neck of the Humerus by Abduction and External Rotation** (S. Italian in English)  
Ann Surg 1904 38:1 19 99

In high fractures of the humerus the head left in the glenoid is rotated externally by the rotatory muscles while the distal stump either by its own weight or the action of the pectoral and other muscles is placed in internal rotation. Although it is possible to correct overriding of the fragments it is impossible to correct displacement due to inverse rotation. Therefore in subcutaneous fractures of the humerus Taddei fixes the arm in abduction and external rotation of 180 degrees. This he does by means of an apparatus which he describes and shows by illustrations.

W. A. BRENNAN

**Arcangeli M. A Case of Isolated Fracture of an Intervertebral Disk** (Sopra un caso di frattura isolata di un disco intervertebrale)  
Chir Organi 1904 10:1 19 99

A quarryman aged 30 years was standing on a marble block that projected from a cliff. A heavy rope about his waist was fastened to the brow of the cliff. The marble block suddenly broke loose and the man fell into space dangling at the end of the rope. The result of the trauma consisted in strangling pressure from the tightened rope and contusion from pendulum like beating against the cliff.

The man was placed in a hospital for twenty-six days and then sent home. Although the multiple contusions and excoriations healed he was still unable to return to work six months later because of general weakness and pain in the spine on bending forward. There was no bladder or rectal disturbance except difficulty of micturition associated with discomfort in the lower part of the abdomen. The man appeared healthy and robust.

On examination the first lumbar spinous process was found very prominent but not depressed laterally. The tonicity of the lumbar muscles, the reflexes and cutaneous sensation were normal. Rising from the stooping position leaning to the side rotation of the trunk and hyperextension of the lumbar spine caused considerable pain and some rigidity of the lumbar spine.

During the following year the general weakness increased bending forward became more restricted

and the first lumbar spinous process became more prominent and painful on pressure. Walking in descent was particularly painful.

For the next few years the condition remained practically unchanged. During this period anteroposterior and lateral X-ray views showed a wedge-shaped deformity of the intervertebral disk between the normal bodies of the first and second lumbar vertebrae which almost touched on their anterior borders. The projection of the spinous process of the first lumbar vertebra was due to the forward tilting of the body of this vertebra. The peripheral portions of the disk bulged laterally beyond the vertebral bodies. The spine was otherwise normal.

A diagnosis of isolated fracture of the cartilaginous disk between the first and second lumbar vertebrae was made.

The author considers the case of special interest because of the rarity of the lesion, its causation by sudden squeezing of the waist and hyperextension of the spine, the paucity of neurological signs and symptoms, and the length of the period of observation.

Other cases of isolated fracture of an intervertebral disk have been reported by Kocher, Middleton and Teacher.

WALTER C. DURETT, M.D.

Stevens J. H. Compression Leverage Fractures of the Ankle Joint. *Surg. Gynec. & Obst.* 9:24 1914

By a detailed presentation of the applied mechanics of ankle fracture the author shows that when a man weighing 150 lbs. steps off a curb and turns the foot outward in eversion there is a compression and leverage stress of 600 lbs. on the fibular side of the leg.

There are two distinct mechanical entities involved in eversion fractures. The first is leverage with the center of gravity mesial to the foot. The fulcrum is at the inferior tibiofibular ligament, the short moving power arm is the foot, and the weight is the body. If the ligament holds, the fibula breaks either at the joint level or about 6 in. above it usually at the latter point because it is weaker there. The second mechanical entity is a compression and leverage mechanism with the center of gravity lateral to the foot. The moving power lever is the man's weight as he falls outward, the foot being fixed under this weight. The fulcrum is the point of contact between the tibia and fibula. As the fibula is comparatively rigid, the break comes at the weak point in the bone a little above the fulcrum.

The majority of the milder injuries are produced by the first mechanism, and most of the severe ones by the second.

The author contends that the rotation mechanism which some surgeons claim is the cause of this fracture cannot be accepted.

There are many more eversion fractures than inversion fractures because there is much more yielding on inversion. A fracture of the external malleolus alone from inversion is due to rotation leverage rather than to avulsion.

Splints in the tibia anterior (common) posterior (less frequent) and longitudinal (more frequent) are due primarily to impact.

Compression leverage fractures may be divided into two classes: (1) eversion (2) inversion.

Eversion fractures are of the following types:

Type 1. A simple periosteal tear of the internal lateral ligament. This is rare.

Type 2. Fracture of the external malleolus alone half way between the joint surface and tip without displacement of the foot.

Type 3. Fracture of the internal malleolus (a) at the tip from rotation stress or (b) at the joint level.

Type 4. (a) Fracture of the fibula alone at the joint level usually oblique upward and backward with backward displacement of distal fragment. (b) Fracture of the fibula alone above the joint level.

Type 5. (a) Fracture of the fibula at the joint level and fracture of the internal malleolus. (b) Fracture of the fibula high up and of the internal malleolus at the joint level, the classical Pott's fracture.

Inversion fractures are of the following types:

Type 1. Periosteal tear of the external lateral ligament.

Type 2. Transverse or oblique upward fracture of the internal malleolus at the joint level.

Type 3. Fracture of the fibula at the joint high up. Rare.

Type 4. Fracture of the fibula and internal malleolus (a) of the fibula at the joint level (b) of the fibula higher up.

In reduction the knee should be flexed first. Rocking the foot usually corrects the lateral displacement. Backward displacement is sometimes overlooked; it should be reduced by pulling forward on the calcus and making backward pressure on the tibia. A Cabot splint should be employed at first, not a cast. If the internal malleolus is broken the foot should not be inverted. The knee should be kept in the flexed position. Active and passive motion may be begun in a week, sometimes sooner. Active and strong dorsal flexion, essential plantar flexion should never be extreme. A cast should be applied after a week and cut so that it may be removed for motion. The first few days the foot should be soaked in hot water before it is exercised. In cases of simple fibular fracture weight bearing may be begun cautiously in twenty days but in cases of more complicated fractures it should be delayed for four or five weeks. If proper mobilization is carried out, convalescence will be shortened. The shoe heel should be built up on the inner edge from 4 to 1/2 in. to prevent eversion.

WILLIAM A. CLARK, M.D.

Geist E. S. Old Fractures of the Ankle. *J. Am. M. A.* 1924 LXX 950.

The author divides ankle fractures into four classes: (1) those with inversion, (2) those with eversion or Pott's fracture, (3) those with backward displace-



ment of the astragalus on the tibia (4) linear and ununited fractures. Special attention is paid to backward displacement of the astragalus which usually carries with it a large or small portion of the tibia. In the treatment of fresh fractures the astragalus must be placed in absolutely correct alignment with the bones of the leg and frequent roentgenograms should be made of both ankles. Stability is necessary to permit weight bearing. Any abnormal mobility of the ankle or deviation of the astragalus from the center line will result in a weak and painful ankle.

A tendency toward the equinus position is noted in all types of ankle fractures. This must be prevented by keeping the foot at a right angle to the leg. In the after treatment physiotherapy is valuable.

The author reviews a series of thirty five cases which were seen in a period of five years. The complaints were the same viz pain stiffness and swelling of the ankle joint. All of the patients limped and most of them used canes. In some of the cases

there was marked shortening of the tendon of Achilles. In about two thirds the previous treatment had been inadequate.

Pain was due to bone atrophy mal alignment or rigidity or a combination of these factors. Bone atrophy could have been largely eliminated if vigorous physiotherapy had been instituted. In seventeen cases in which the astragalus was not placed directly under the tibia function was materially interfered with and pain resulted. In fourteen cases there was marked shortening of the Achilles tendon and pain ensued because the fore part of the foot was forced to do more than its share of the weight bearing. In a few cases there was posttraumatic arthritis.

In the treatment simple lengthening of the heel tendon will often suffice. In posttraumatic arthritis arthrodesis is frequently necessary. In cases of mal alignment due to inversion or eversion a supra malleolar osteotomy is indicated. Backward displacement is difficult to correct but sometimes arthrodesis will help. ROBERT LOV RICHARD M D

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD TRANSFUSION

Ra din S. Reactions in Transfusions S. t.  
Cl. V. 1m. 924. 89

The 1000 cases reviewed were treated at the University Hospital Philadelphia during the last 10 years. The transfusions were given with the Kimpton Brown tube by the syringe cannula method by the citrate method with the use of the Luer apparatus and with the use of 100 c.cm. Luer syringes.

From this study the following conclusions are drawn:

1. Except in emergencies the donor and recipient should be carefully matched not merely typed. It has recently been shown that in each of the four main groups there are subgroups.

2. Reactions may occur regardless of the method used. It is probable that in certain diseases such as severe anemias the chemical character of the blood plasma is altered. A reaction may possibly result also from variations in the hydrogen ion concentration of the blood of the donor and recipient.

3. Bacteria may be introduced at the time of the transfusion.

4. The blood should be transferred from the donor to the recipient as rapidly as possible. Delay increases the reaction.

5. The danger of reaction is in direct proportion to the number of transfusions given. Even if the same donor is used the blood should be matched for each transfusion.

6. Under certain conditions auto agglutinins may be present.

7. Any method which allows beginning coagulation—particularly delay in the transference of the blood—favors reaction.

In discussing the prevention of specific reactions following the use of the citrate method the author emphasizes the importance of using absolutely pure sodium citrate not an ordinary commercial preparation. Fresh distilled water must be used. Commercial preparations of distilled water are not fresh and may have a decided acid reaction due to impurity. The solutions should be prepared at the time of the transfusion. Sodium citrate will not stand repeated sterilization as in this process it gradually liberates free carbonic acid. The blood of the donor must be transferred to the recipient as rapidly as possible. Exposure to the air allows the escape of carbon dioxide and increases the alkalinity of the blood. The citrate solution should be added to the blood 1 ml.

New rubber tubing should not be used in any method.

Oscar S. Packer, M.D.

## LYMPH VESSELS AND GLANDS

Gloja E. Anatomicopathological and Clinical Contribution on Primary Tumors of the Lymphatic Glands (Sui tumori primari delle ghiandole linfatiche—contributo anatomicopatologico clinico). *Arch. Ital. di Chir.* 1923, 1, 113.

The author reports in detail two cases in which a diagnosis of tuberculous lymphadenitis of the cervical region was made but at biopsy and autopsy the condition in one was found to be a lymphosarcoma and that in the other a primary endothelioma of the cervical lymph nodes. The error was due to the fact that there is a hypertrophic type of glandular tuberculosis which has all the clinical characteristics of lymphosarcoma: malignant granuloma and primary nodal endothelioma. On the basis of their microscopic character these pseudoleukemic entities may be divided as follows: (1) leukotic lymphadenitis (granulomatous rare), (2) hypertrophic tuberculous lymphadenitis (pseudoleukemic), (3) malignant lymphogranuloma (Hodgkins) and (4) neoplastic lymphadenitis: primary lymphosarcoma, endothelioma and secondary carcinoma.

The differential diagnosis of these conditions is difficult from clinical inspection alone; often biopsy is necessary.

Pseudoleukemia occurs most frequently in young men. Its insidiousness is marked by tumefaction of a chronic nature. As the disease advances it involves the axillary glands and occasionally the inguinal glands. If death does not supervene too soon the visceral and mediastinal nodes may be attacked. On the whole the reaction is afebrile. The liver and spleen become enlarged and the general condition deteriorates rapidly and progressively. Occasionally there is mucosal and cutaneous hemorrhage. The blood shows oligocythemia and oligochromemia. The microscopic findings suggest lymphosarcoma.

Malignant lymphogranuloma is characterized by multiple glandular tumefactions beginning in the cervical region and extending to all of the nodes of this group. Frequent attacks of pyrexia are common. The spleen and liver show lymphatic changes. Occasionally the size of the nodal masses is reduced but this is only temporary. The condition causes progressive pallor and loss of weight. The blood picture is typical, there being always a marked eosinophilia of 40 to 50 per cent. Histologically the granulomata are characterized by the presence of the so-called structures of Sternberg: (1) epithelioid cells derived from reticular endothelial elements and (2) cells of Sternberg. In the opinion of Gibbons, MacCallum and Clegg this type of lesion is malignant at least clinically if not microscopically.

Lymphosarcoma is particularly difficult to differentiate from other malignant changes in the cervical lymph nodes. Even in non-malignant lymphadenitis there is a distinct invasion of the lymphoid structures. Both the clinical and the microscopic picture are essential for the diagnosis. Lymphosarcoma derives its histological characteristics mainly from the atypical proliferation of the lymphatic structures with the proliferation of lymphatic cells. Lymphosarcoma may develop from any lymphatic tissue in the body, but the lymphatic glands are its most common sites. When the condition is more or less generalized it is histologically neoplastic because there is an invasion and infiltration of the surrounding tissues beyond the glandular tissue and the metastatic masses show the characteristic structure of the primary lesion.

Primary endothelioma of the lymphatic glands is relatively rare. It springs from the lymphatics or from the endothelium of the blood vessels permeating the glands. Histological diagnosis is not always possible when it is based on the absence of epithelial neoplastic formation. The lesion spreads by contact along the lymphatic channels. It is a slow process but despite its chronicity it is definitely malignant and inevitably causes death. Frequently it manifests a regressive action at the primary site but the metastatic masses are undisturbed.

On the basis of the microscopic findings the author maintains that the view hitherto held that lymphosarcoma does not involve and destroy muscle tissue and blood vessels is erroneous. Microscopic examination of an intramuscular node removed from one of his cases demonstrated beyond a doubt that it infiltrates the muscle fibers even to the point of destruction and replaces them with its own tissue substance.

The lymphatic glands may be the site of endotheliomas of the primary oval and fusoid type which simulate sarcomata of fusoid cell structure. Of value in the differential diagnosis of the two conditions are the general lack of stromal invasion of the endothelioma and the limited local involvement of the sarcoma. In the microscopic examination of an endothelioma is indicated by absence of a reticulum, scarcity of karyokinesis and the presence of cellular polymorphism and cells of epithelioid type.

A positive cutaneous reaction to tuberculin may be due to some deep tuberculous focus entirely unrelated to the lymphatic involvement.

In certain cases of neoplastic lymphadenitis the use of the X-ray is of value only as a palliative measure.

J. MRS. V. H. C. 3111

Stone W. S. The Treatment of Hodgkin Disease by the X-ray and Radium Based upon a Study of 200 Cases. *Cancer* 1914, 1: 109.

Stone analyzes the records of 164 cases which are sufficiently complete to furnish statistics on the results of X-ray and radium treatment. These indicate that only palliation can be expected. Only five of the patients are living and without appreciable lesions or symptoms. One has been well for more than four years, three have remained well for more than three years, and one has been well for only six months. One patient died after being well for more than five years.

Palliation can be obtained in 60 per cent of the cases, and complete restoration of health with or without complete regression of the tumors in about 32 per cent. Restoration of health is often lost for a year and rarely for three or four years. If palliation is to follow it will begin after the first or second treatment. Stone W. S. *Cancer* 1914, 1: 109.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Hantcher H. *Surgical Drainage* (Lancet, Chirurgical Practice, Feb. 1924, vol. 27)

In Hantcher's opinion the most practical and scientific method of establishing surgical drainage is by capillary attraction. In experimental investigations he found that secretion and absorption vary according to the region the tissues the nature and virulence of the infection the general resistance of the body and the time of the day. The fluid evacuated by a capillary drain is not pumped or sucked by force but is secreted spontaneously by the wound and drained immediately after its production and before its absorption. It is most important to prevent absorption. When drainage is faulty septic fluids are forced into the recesses of the wound and infection by continuity is favored.

The fluids secreted in the different parts of a wound are often of different densities. Therefore a drain is necessary which will serve to remove all types of fluid and remain open even when they contain more or less solid material as is often the case.

Hantcher has devised unperforated capillary drains to meet such conditions. At first he employed a tube drain split longitudinally the two parts being sewed together back to back. This he has now abandoned. The newest drains consist of a number of rubber strips which cross each other at acute angles the spaces between the strips forming the capillary routes. A number of such drains are illustrated. Tests have shown that they evacuate the wound much better than the older drains that they will drain fluids differing in physical character and that the routes of drainage are in full contact with the interior of the wound. As they are without lateral perforations the soft tissues cannot enter them and cause obstruction and as they are rigid they can be introduced into deep wounds.

V. A. BRENNAN

Adams S. F. and Wilder R. M. *The Surgical Risk of the Diabetic Patient* (Surgical Clin. of America, 1924, 587)

This report reports upon the operations performed on diabetic patients at the Mayo Clinic in the two year period ending October 1, 1923.

In 327 operations performed on 251 patients there were four deaths. The total mortality for all operations was 1.2 per cent and that for major operations 2.8 per cent. None of the deaths was attributable to acidosis. One hundred and forty-one

of the operations were classified as major. Among these there were ninety-five abdominal operations.

The authors attribute the excellence of the results to the fact that there was perfect cooperation between the surgeons the anesthetists and the internists. Skillful surgery is seldom in the choice of the anesthetic and careful pre-operative and post-operative management place the diabetic patient on an equal footing with the non-diabetic patient undergoing an operation.

Although insulin was available during the last year of the two year period it was used in only 43 per cent of the cases. The pre-operative and post-operative management with reference to the diabetes is described. Patients with gangrene of the extremities were treated far more conservatively than was formerly thought possible.

It is concluded that the diabetic patient who undergoes operation today is just as great a risk as ever and that only by perfect cooperation of the various persons concerned in the treatment can the mortality rate in this group of patients be kept as low as the general mortality rate in a similar group of non-diabetic patients.

## ANÆSTHESIA

Faure J. L. *Spinal Anaesthesia* (Rachianesthésie) (Bull. Méd. Soc. Paris, 1924, 186)

Faure defends general anesthesia which he believes should remain the most commonly used anesthesia. Among the anesthetics employed to day the mixtures are the best. Schleich's mixture is particularly good. During the seven years that Faure has used it he has never had an accident despite the unfavorable conditions under which it was often administered.

Local anesthesia is suitable for minor operations and for certain cases of severe conditions in which it is impossible to use a sufficient quantity of ethyl chloride. Spinal anesthesia is warranted only in certain very exceptional cases.

Faure states that there is a tendency today to follow new methods of inducing anesthesia because they are spectacular new and different. While it is admirable to be able to execute a major operation on a conscious patient without causing pain it is more admirable he believes to operate upon an unconscious patient who will have no recollection of the ordeal through which he passed. Anesthetic sleep one of the most marvelous conquests of man over the forces of nature has made possible the perfection of modern surgery and should not be abandoned.

W. A. BRENNAN

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Muller C P: Surgery in Diabetics. S & C N A M 1914 1: 147

The relation of diabetes to diseases requiring surgical intervention is attracting increasing attention especially since the discovery of insulin has offered a means of controlling the coma which is responsible for nearly 80 per cent of the deaths. In a series of 385 diabetic patients treated at the Massachusetts General Hospital Fitz found that 22 per cent required surgical treatment and in 603 cases of diabetes Joslin found that at least 12 per cent required operation.

Joslin reports that he has records of twenty-seven cases of diabetes operated upon before 1917 in which the mortality was 28 per cent. These did not include cases with gangrene or sepsis. Since 1919 there have been sixty-one operations in similar cases with a mortality of 9 per cent. Fitz reports that in one group of twenty cases of acute infection or gangrene operated upon at the Massachusetts General Hospital in the period from 1913 to 1917 the mortality was 50 per cent while in a second group of twenty-five non-infected cases the mortality was 12 per cent. Young states that of ninety-nine patients with diabetes who were treated at the same institution in the period from 1913 to 1922 only sixteen died a mortality of 16 per cent. In the collection of cases recorded by Phillips in 1902 the mortality was 25 per cent.

From these figures and others it is apparent that persons with diabetes have almost as good a chance from operation as those who are not diabetic unless there is sepsis. The factors of importance in lowering the mortality are (1) proper pre-operative preparation (2) proper anesthesia and (3) proper postoperative care.

In the pre-operative care measures must be taken to improve the condition of the cardiovascular system. Digitalis should be given in intensive doses unless it is contra-indicated. Attention should be directed also to the kidney function and mental disturbances should be alleviated as much as possible. The regulation of the diet is of supreme importance but the complete withholding of carbohydrates is indefensible. The diet should be that which brings the patient to the point of carbohydrate tolerance. Regarding the use of alkalis in the pre-operative preparation Muller states that formerly he employed sodium bicarbonate in doses sufficient to alkalinize the urine but recently has given it in only moderate doses. He never gives it intravenously. Patients may be sent into coma by the careless use of sodium bicarbonate.

In the author's cases insulin is given cautiously before meals until the urine is sugar free. It acts by promoting the burning of carbohydrate, hence the patient must be given sufficient carbohydrate to serve as fuel.

With regard to the choice of the anesthetic Muller states that as ether has an injurious effect on the liver and body fats it should never be used in cases of diabetes. Local anesthetics are also contra-indicated as they predispose to extensive necrosis if infection occurs. The anesthetic of choice is nitrous oxide oxygen. For operations on the extremities and pelvis its use may be combined with spinal anesthesia.

During the operation the tissues must be handled very gently as their vitality is low because of the vascular degeneration.

The proper postoperative treatment is merely a continuance of the pre-operative except that the patient must be watched constantly in order that insulin and glucose may be given if coma threatens. The plasma carbon dioxide is of great value as an indicator. Water should be given early. The author starts hypodermoclysis on the operating table and continues it until the patient is ingesting water freely. The patient's stay in bed should be short and he should be taught to exercise in bed.

Diabetic persons with acute appendicitis perforated ulcer ruptured extra-uterine pregnancy etc. must be operated upon without regard to the diabetes. If the presence of hyperglycemia is known the operation should be carried out with the precautions mentioned minus the pre-operative dieting and every effort should be made to reduce the acidosis after operation. Thalheimer has shown that not only diabetic but also non-diabetic acidosis may be treated successfully with insulin.

The most important operations of necessity are those for gangrene of the lower extremity, carbuncle and cellulitis. Next to coma gangrene is the most dangerous complication. Gangrene is usually a late complication and is almost invariably associated with arteriosclerosis. The glycosuria may be a primary or secondary condition. In many cases it promptly clears up after amputation and healing. The gangrenous foot should be amputated early. A few days are sufficient for the study of the laboratory reactions and the preparation of the patient for operation by the free use of water and digitalization.

In the seventy-seven cases of amputation in cases of diabetic gangrene reported by Joslin, Binney and Jones there were thirty-seven deaths a mortality of 48 per cent. In the author's opinion this is a very high percentage and suggests that the diabetes was too severe for control or that delay had

avored sep is Young states that there are two types of diabetic gangrene—one of the arterio sclerotic type in which the operative indications are the same as in cases of sclerosis and the other a type in which the gangrenous process can generally be influenced and even arrested by proper dietetic and local treatment. In regard to the latter Stetten advocates hot baths of saline solution twice a day or baking in a hot oven local treatment with wet saline compresses and excision of the necrotic tissues when the line of demarcation has formed. Muller cautions however that the danger in diabetic gangrene is that of sepsis and unless this is controlled promptly amputation should not be delayed.

Many cases of cellulitis in the foot are accompanied by a cyanotic appearance suggesting gangrene. Free incision with the removal of sloughs and the drainage of pus pocket plus treatment for the diabetes will often result in healthy granulation and healing. If the phalangeal joints are open and infected amputation of the toe should be done by a simple guillotine method.

Carbuncle has long been considered a frequent complication of diabetes but of a series of forty two patients with carbuncle treated at the University Hospital Philadelphia only six were diabetic.

The article is supplemented with illustrative case reports.

## MEDICAL JURISPRUDENCE

### Failure to Recognize the Presence of Osteomyelitis

12 d 11 d 40 N E p 546

In this case Uland employed the physicians to treat his arm. He claimed he had osteomyelitis in the arm that part of the bone had sloughed off and that pus had formed. In the suit he contended that the physicians had negligently failed to diagnose the ailment and had adopted a vaccine treatment that because of their failure to perform an operation he lost more of the bone in his arm than would have been necessary if the proper surgical treatment had been given.

The evidence showed that the physicians made a complete examination of the patient including the usual blood tests, urinalysis, X-ray examination, microscopic examinations of pus, etc. A diagnosis of streptococcal infection of the arm, only the soft tissues, was made. After five months the bone was discovered to be infected and part of it was removed by a surgical operation.

There was some disagreement on the part of the experts as to the nature of the patient's condition at

the time he employed the physicians three testifying that he had acute osteomyelitis and six that he did not have that disease at first.

The jury found again that the physicians in the sum of \$2,000. The Supreme Court of Indiana in reversing the judgment and ordering a new trial stated that even if the plaintiff was afflicted with osteomyelitis from the beginning and the defendants were mistaken in their diagnosis such facts alone would not give the plaintiff a right to recover damages. A physician or surgeon is not an insurer and does not bind himself to make a correct diagnosis and effect a cure or to respond in damages. He is bound only to possess reasonable skill and to use ordinary care and if he makes a mistake in his conclusion as to whether a sore spot on the skin has its origin in the flesh or in the bone under the flesh he is excused from liability if possessing reasonable skill he has used ordinary care in making an examination and has honestly reached the mistaken conclusion by the use of such skill and care. Not having warranted a cure he is not liable for the consequences of an honest mistake of judgment if he has reasonable skill and learning and uses ordinary care.

WILLIAM E. MOONEY

### Improper Treatment of an X-Ray Burn K or 121 11 E 93 So p 43

Knowles was given X-ray treatment by Dr. Dark for eczema on both feet. After this treatment swelling and ulceration caused apparently by an X-ray burn developed on the left ankle. Following treatment by Dr. Dark and other physicians Knowles was taken to Dr. Blue. Dr. Blue prescribed local applications. As these did not produce the desired results Dr. Blue curetted the wound and covered it with a graft of skin taken from the thigh.

There was evidence to the effect that the grafting of skin on an X-ray wound was improper but the evidence offered on behalf of the physicians was to the effect that grafting was the best method of treating such a wound.

The trial court charged the jury that unless it is provided by an express contract a physician or surgeon does not warrant that he will effect a cure or that he will restore the patient to the same condition as before the necessity for treatment arose or that the result of the treatment will be successful.

In the trial of the case the verdict was in favor of the physicians and the patient appealed the case to the Alabama Supreme Court. That court sustained the action of the lower court and approved the charge to the jury.

WILLIAM E. MOONEY

# BIBLIOGRAPHY of CURRENT LITERATURE

NOTE.—This Bibliography is published by the Bureau of the American Medical Association, and is intended to be a guide to the literature of the various branches of medicine and surgery. It is published quarterly, and is free of charge to all who send for it.

## SURGERY OF THE HEAD AND NECK

### Head

On the problem of the treatment of the head and neck, see the following articles, published by the American Medical Association, in the Journal of the American Medical Association, Vol. 1, No. 1, 1924, p. 1.

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## SURGERY OF THE NERVOUS SYSTEM

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- A ea c of t eptocoecal ul rat e colit cu d by serum  
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- Cont u u painf le nst pati n d cec igmoidostomy  
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# International Abstract of Surgery

*Supplementary to*

**Surgery, Gynecology and Obstetrics**

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He d  
CREIG D M T ers g W unds f th O b t

Eye  
WHITE D W d WHITE P C The Medical a d  
Surgical Treatment of Trach ma

JAMES R R a d COLLEDGE L Lupus f the  
Lachrymal Sac

COPPS L A The Ea h T m nt f l j nes to  
the Ey ball

LUEDDE W H f tors D te min g th Ch ce f  
Operat i Gl u oma

CORDS R Cyclodial th Best Operat f r  
Simpl Glau oma

CIFFORD S R A Fu th Not on Oc l Sporo-  
tri hosi

BUTLER T H Observ to nth Pract Al al  
f the S t Lamp

BUTLER T H On v ability f th Act l Blood  
Stre m w th the Ordin ry Loupe

BYERS W G M A C s f En ps l ted Angioma  
of the O bit

### Ear

LES ER M b St dies f Ma t d Disease by the  
X Rays th Clu c l Ob v s t nd Op  
at e F d gs

LEA LEX G F St die f M t d D ase by the  
X Rays th Operat e F d gs D monstr  
t on f a Special Localiz r

MILLICA SIM W The Surgical T atm t f Sup  
pu at e nd C rtain n Suppurat Affec  
ti ns f th Labyrinth

KERRISON P D Th T tm nt f D af ess

### Nose and Sin s s

DOWLING J f The R l t o of th Maxillary Sin  
t Ocular Diseases

CRANE C G N sal A sorv S nu Infecti nd  
Obital D se

BE RY G Bra Ab-c f P asal Sinus Origin  
T C ses

### Mouth

BR PHY T W Fu dam tal Pri ciples a d Recent  
C ncl ons nth S g ry f C g Ital Cl ft  
P l t

FLETT J A M lgn es f th O l Ca ty

### Pharynx

LOTT H H Ton ll r focal Inf ct on A \ w  
D gn st c Poi t

LA SOW N G H Ind cat ons f r Tons illectomy  
with C rti sm of the Operat on

WAR IT A J Spe men Secti n and D a ng of a  
Case of Mycosis Fungo des Involving the  
Pharynx a d Larynx

### Neck

SALERTON C W S Th \ hay Tre ment f  
Hyperthy dism

PATCOR and PAQUET F bromata Complicat g  
Pegnan y Caesarean Sect on Foll wed by  
Hyst rect my in Patie t w th Basedows  
D sease

### SURGERY OF THE NERVOUS SYSTEM

#### Brain and Its Coverings Cran al Nerves

TROTTER W Certain Mn r Inj nes of the Brain

SAJOUS C E d M Th Hypophyseobasal Arc in  
It Rel t nt the Path ges s and T eatment  
f D betes In p d s nd P lyun (Including  
St dy of Thirtv Autops es)

PI EY A nd COATES I Metastatic Carcinoma  
f th P tuit ry Gland and Diabetes I s p dus

BERRY G Brain Abscess f Paranasal S nu Origin  
Tw Cases

#### Spinal Cord and Its Cov r ggs

BFC BRE A Ca of Syringomy lia T e led w th  
th \ Rays Tw pty Years Ag

#### Peripheral Nerves

COMMANDEUR Old Total Ob tetrical Bra h al Pa  
alysis Result after T pty eight Y ars

MILLER O L Neurectomies (Stoerfel Oper t o )  
r the Ty atm t of Spa t c l alysis

BROOKS B d LEHMAN F P The B n Chang s  
in R chlinghausen s \ urofibromato

#### Sympathetic Nerves

HE RY A K A \ w M thod f Res ctng the Left  
Cervicoal Ca gl n of the Sympathet c in  
Angi a P ct ns

#### Miscellaneous

DAVIS F The Treatm nt of th Lat Complica  
ti n f Sp nal Pu ct ure by Fp dural Inj ct on

LA V I a d Ann ap I Resect n fth N r ex  
 f the Kid f N phralgia d S nall Hy fr-  
 j h oes

# SURGERY OF THE CHEST

## Chest Wall and Breast

ST R A R C fth B t

## Trachea, Lungs, and Pleura

M C R A T Th Cl al Test res f F regn  
 B fca l th f H L e t res f H a d H

W R T M A R W Th f t l g f Treatm t f  
 N T ber ul Pulm n y M l oes

B t t P R t a e C D A H M fth r s  
 Tle S r g f Treatm t f l l m r y Fuler  
 culis

S A N T Y P a l C h l l m r t M l t r a p e u r a l  
 T l p l t y t H l a t t n o f t h e B r o n h

## Heart and Pericardium

M A R T H M l f H R A V A S C T h r o n a l  
 T r e a t m t f A t t P e r i c a r d

C a t l l J S a f R e v e r t f S m S r g f  
 f l l m r f C n l g The T e c h f d  
 M t r a k t o m

## Esophagus and Mediastinum

S M T H t J R R e p h a g f D t t u l a  
 A t s n P f T h M g w e t f C a t u l t b

n f S t r t r e f t h Q u e s l a g  
 S M T H f W a n d S r g J S T m e s f t f

M e d i a s t i n u m f C h i l d r e n  
 f l r a C f l S t u l f t h f r m l t f  
 K w e n t g e n k y

## Miscellaneous

T H M f f f f m H l T l D g n f  
 f r a r y f t t h f N e q l m

H f a C f f t t r f r s

# SURGERY OF THE ABDOMEN

## Abdominal Wall and Peritoneum

E S T E R J A f a s c i P l a t t h k p a f In  
 g u a l H

R I B f t t n t f A p p e f f O a n f P r e h  
 a y t t l S e c e f M t h

D r a f n C W C h a c e t h M f C t  
 f t t f f e p

## Gastro-Intestinal Tract

S T R A U T F R J f M H y l f l t p f t h C t r o  
 f t e s t f T r a c t

R E L L J K a n f M A m W Th A t n n  
 C t r l S e r e t n f l l N m f f f d l

C a c t e C C g f t l l p e t f l f f  
 S t o n s f f f f

U R A T H T f R f A V A M t t  
 U l r S t l e s

H R T A F The Treatment f S e r e C t r i c n l  
 D l e n a l H e m h a g e

21 M A O C H C s t n l o s t m y f t I n d e a t s  
 f e c e T h l f k e s u l t f t l T r e t m t f P e r

f r a t e d C t r l d H u d o n a l U l e r s

B A R t r l C f r a t r s f S a f e t y C a t n S r  
 e r y

120 L O R V E F J A e t n e m d A l u l f t h e  
 S m a l l I n t e s t C h l l h o f

O r A W R m a k t h e D i a g n o s d T r e t  
 m n t f C h r c I n t u s c r i p t s

Mc K E N T Y J L i n c d f J S t n o r

02 D r u t J S N e P h s e i n t h h o e t g I n  
 t r p t a t f D a u l e n U l r

00 A R R A Y F f C a t n I n t p e s t m O b s e r v a t i o n s  
 n l t M e c h m a f n t h e f r o d c t o f f n

00 I n H u l n f l l k e

00 F t a S C o f t h D f f l a l f l x  
 u

0 C t y J A n l u a l M e h a m f t h e P r o d u c t i o n  
 f f t e m f t r a n f t u o l y M e c k l D f e

0 B e u m S R S t f T h f r l l e r f D f g e i n  
 A c u t A p p e n d i c i t

22 R a c e y A F T r a n s e r e f c n f D e p e l f f  
 H e a n g l A p p e l f l t

202 L i v e r G a l l B l a d d e r P a n c r e a s a n d S p l e e n

M a f C A C f l l r a t f S m f t h f e  
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21 H e T a x a s C S m f r o l l m o f J u f f  
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03 H e v e C C M N a t W J a n d k l i a J A  
 H e p a t i t f R e t f t m m a t r y D

03 S e f t h A f m n A C f n f f a l r a t r y  
 S t l y

04 f r e m J C f S e s D C B l r u b D e  
 t e m t n t C h l e c t t W t h o J p l r e

04 f e a r C l e u l C h l e c t t d C l e u l  
 A p p e a l f C h l e c t t m y f A p p e n d e c

04 f e m y h e c r y

04 f a n n J J A C t n f d t h e r a t C f r a  
 t f T r a m a t e d H l l t t

04 H m s e n t A C s e f C a s t f t h C m n  
 H l D t

04 M a s e r f C J f e M W e r n e A S d  
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 g e s f n t r e f t b D i s e a s e

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 W t h t S q l m m k l C r e d b f t e c t m

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C e v A Z T h D f f t l l D g a B t e e n  
 A u t T h r a f A u t A d m i n f l e s n

06

06

U t e r u s

I n s C m p l t U n K i t n C u d b y a  
 f t n f f f t h l o t e r W a l l f R t r o f f e d  
 U t e r a

# GYNECOLOGY

Uterus

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 W e t m r e A S 2 6  
 Whart n L R 225  
 White D W 90  
 White P C 190  
 Whitt m r W 00  
 W l l T A 239  
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 W g h t A J 194

## EDITOR'S COMMENT

THE ophthalmologist as well as the surgeon who appreciates the necessity of keeping abreast of progress in every department of surgery will find many abstracts of importance pertaining to ophthalmological subjects in this month's issue of the *ABSTRACT OF SURGERY*. The etiological relation of sinus disease to affections of the eye and inflammations within the orbit has received increasing attention in recent years. Abstracts of articles by Dowling and Crane (p. 193) again emphasize the importance of careful examination of the sinuses in the presence of inflammatory conditions within the orbit. An extensive discussion of traversing wounds of the orbit by Grieg (p. 189), two reviews on the treatment of glaucoma by Corde (p. 191) and Luedde (p. 191) and a review by D. W. and P. C. White on the treatment of trachoma (p. 190) are important contributions in the field of ophthalmology.

The subject of gastric surgery is represented this month by an unusually interesting and authoritative group of abstracts. Balfour's discussion of the factors of safety in gastric surgery (p. 209), C. H. Mayo's review of the indications for gastroduodenostomy (p. 208), Dragstedt and Vaughan's report of experimental studies in gastric ulcer (p. 207) and Hurst's discussion of the treatment of severe gastric hemorrhage (p. 208) constitute a symposium on surgery of the stomach that is worthy of thoughtful study and attention.

OF equal interest both because of its importance and because of the wide experience and ability of the men whose papers are reviewed in the section devoted to carcinoma of

the uterus. Crile, Portmann and Jones of Cleveland discuss this subject from the standpoint of the surgeon, the roentgenologist and the radiologist (p. 211). Clark and Block of Philadelphia after summarizing the results obtained in ten surgical clinics compare the relative value of irradiation and radical hysterectomy in cervical carcinoma (p. 223). Norris and Vogt review the subject of carcinoma of the body of the uterus on the basis of 115 cases observed during the past twenty-three years at the University Hospital, Philadelphia (p. 221). Heyman reports the results obtained in cases of carcinoma of the cervix during the past ten years at Radiumhemmet, Stockholm (p. 223).

A number of other abstracts in this month's issue of the *ABSTRACT* touching various fields of surgical practice are worthy of careful attention. Mann's discussion of liver function (p. 213) is of particular interest because of the definite and clear cut experimental work upon which it is based.

Friedmann and Strauss summarize the tests for the detection of bilirubin in the blood and discuss the importance of its presence as an aid in the recognition of gall bladder infection when jaundice is absent (p. 215). Pack, Underhill, Epstein and Kugelmas in reporting the results of experimental studies in electro-ionic medication (p. 255) state clearly and concisely the physical changes which occur in various solutions of organic and inorganic compounds as a result of electrolysis. The results reported permit one to judge of the value and approximate field of usefulness of this much advertised method of therapeutics.

# INTERNATIONAL ABSTRACT OF SURGERY

SEPTEMBER 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Greg D M Tra cring Wounds of the Orbit  
Ed b gk W J 9 4

Greg reports a case of tra cring wound of the orbit which resulted in a temporary ipsilateral abducens paralysis temporary and slight paresis of the contralateral oculomotor and facial nerves and an ataxiform tremor of the ipsilateral limbs.

The injury was produced by an umbrella rib which entered the superior orbital fissure and passed lateral to the internal carotid artery between this artery and the abducens nerve. The nerve was not transected or torn but the contact was evidently sufficiently direct to stretch it. The umbrella rib then passed through the lateral cerebral peduncle in the region of the red nucleus and the substantia nigra.

The strain on the trunk of the abducens nerve doubtless injured its deep nucleus in the trigeminal ganglion. The slight contralateral facial affection was explained by the subsequent reactionary edema since the intrapontine motor portion of the facial nerve loops around the abducens nucleus. The erythematous nature of the imperfect facial paresis made it seem probable that the motor response was an edema rather than hemorrhage.

The injury to the cerebral peduncle and the consequent reaction to edema could explain the slight and temporary flexion of the contralateral oculomotor nerve. Some of the fibers going to the opposite eye pass through this part of the brain.

The internal capsule and the optic thalamus were not involved in the injury. The cerebellar hemiplegia did not occur as sensation was not affected and subsequent contraction was present. Neither was there any evidence of immediate injury to the optic nerve tract or chiasm. The ataxiform tremor of the ipsilateral limbs must have been due to injury about the right red nucleus. The severity of the initial shock was explained by the relations of the part of the brain injured.

Wounds of the orbit in general the author divides into traversing and non traversing wounds. Traversing wounds of the orbit may be extremely small but they endanger the structures at the apex of the orbit in the superior orbital fissure or in the brain itself. Non traversing wounds often give more external evidence and may even appear very dangerous but need not cause serious anxiety.

The author cites some of the classical cases in the literature and summarizes several experiments performed by Martini on the cadaver to determine what structure would be injured by a rod passed in several different directions. The findings of Martini's investigations were as follows:

A rod passed along the mesial wall of the orbit and through the superior orbital fissure injured successively the lower border of the chiasma one mammillary body the cerebral peduncle the tissues under the splenium of the corpus callosum the occipital lobe and the second temporal phenoidal convolution.

A rod passed along the floor of the orbit through the superior orbital fissure injured successively the point of the temporal lobe on the inferior surface of the brain the caudate nucleus the right lateral ventricle and the calcarine region.

A rod passed along the lateral half of the lower border of the orbit injured successively the peduncle and the cerebellum.

A rod passed so that it entered the brain just in front of the Sylvian fissure injured the cerebral tissue along the superior temporal sulcus below the second temporal and in the first temporal convolution and then passed out of the brain and re entered it transfixing the second occipital convolution. These injuries cause aphasia epilepsy of the facial type facial and lingual hemiplegia word deafness from occipital injury and impairment of the visual field.

A rod passing along the floor of the orbit from below upward and mesially injured the inner part of the sphenoidal lobe passed under the optic tract

and through the mammillary tubercle and penetrated the cerebral peduncle from its anterior inferior aspect to its posterior superior aspect. These injuries result in hemiplegia and hemianopsia.

A rod passed along the floor of the orbit horizontally injured successively the optic tract, the cerebral peduncle and the internal capsule.

A rod passed along the floor of the orbit horizontally injured the central gray nuclei especially the corpus striatum and the optic thalamus and destroyed the optic tract.

A rod passed through the orbit in a direction other than those mentioned injured successively the temporo-sphenoidal fissure, the gray substance, the internal capsule, the optic tract in the white substance, the lateral ventricle and the tissues around the cuneus.

Gregg offers the following conclusions:

1. Traversing wounds of the orbit are to be distinguished from merely penetrating wounds.

2. Traversing wounds which leave the orbit through the foramina orbitalis of the frontal eminential at first but are generally fatal.

3. Traversing wound which leave the orbit through the superior orbital fissure seem very serious at first but are usually followed by recovery with some impairment of cerebral function.

Otto M. Rott, M.D.

### EYE

White D. W. and White P. G. The Medical and Surgical Treatment of Trachoma. *T. St. J. M. 94* 33.

This is a rather short summary of the conclusions drawn from a very extensive experience in the medical and surgical treatment of trachoma. The authors speak of more than 60,000 operative cases. They believe that trachoma is a corneal infection which is not always due to the same combination of organisms, that it is a local rather than a general infection, that much careful work is still necessary before conclusions can be drawn as to its etiology, that the amount of hypertrophy and sequential scar tissue depend somewhat on the strain of the virus, and that the success of drug treatment depends on the strain of the virus and whether or not the condition is true trachoma. Any astringent drug is harmful if it causes the formation of cicatricial tissue. The authors have used many drugs but regard silver nitrate as the best.

Radium glandular therapy, injections of milk or phyllogogen and conjunctival injections of cyanide of mercury are not helpful. The authors mention many drugs they have used and discuss their experiences with them. They review briefly also the numerous operative procedures they have tried and discuss those that proved of value under certain circumstances. They found combined excision beneficial and give fifteen reasons why they recommended it.

The points emphasized in the summary of the article are the following:

1. Careful operative treatment is very helpful if it is followed by long continued drug treatment.
2. Astringents reach only the superficial tissues.
3. Trachoma is infectious chiefly in the so-called acute stages.

4. Infection is transmitted most commonly by school desks, bed linen and rubbing of the eyes.

Thomas D. Allen, M.D.

James R. R. and Colledge L. Lupus of the Lacrymal Sac. *B. J. Oph. 44* vi 165.

In the case reported the lupus involved the skin of the nose in only a small area but there was extensive involvement of the mucous membrane and submucous tissues of the nose and the region of the lacrymal sac. Tissue removed at operation was found filled with giant-cell systems characteristic of tuberculosis and guinea pigs injected with it developed the changes characteristic of tuberculosis.

Thomas D. Allen, M.D.

Copps L. A. The Early Treatment of Injuries to the Eyeball. *J. L. 94* 4 70.

Proper early treatment of wounds of the eyeball is extremely important in the prevention of permanent disability and the promotion of rapid healing. Therefore all injured eyes should be treated from the first by eye specialists. Since this is not always possible all practitioners should know something of the treatment of eye injuries.

A great deal of damage may result from the careless or improper removal of foreign bodies from the cornea. To guard against infection and resulting corneal ulcer the following measures are to be recommended:

1. Anesthesia. Drugs which do not soften the cornea are preferable to cocaine.

2. Asepsis.

3. Antiseptics. Careful removal of all foreign substance and all burned or leucalized tissue followed by the instillation of an antiseptic.

4. Bandaging. A bandage is essential if the epithelium is injured.

5. Observation. Observation should be continued until healing is complete. The cornea should be carefully examined with the aid of fluorescence.

In cases of chemical burns the irritating agent should be removed once by thorough irrigation with a neutralizing solution. In all burns pain may be alleviated by instilling 1 per cent holocaine in liquid albolene. The oil is as lubricant preventing irritation of the cornea by the mechanical tarsal contact.

Severe injuries are classified into large groups viz. those in which the eyeball is not ruptured and those with rupture or penetration. Copps insists that these cases should be seen early by the ophthalmic surgeon as great damage may be done by rough handling, improper dressing or physical alexeresis. The eyelids must be handled carefully and the eye placed at rest by keeping the patient quiet, preferably in bed and applying a well fitting pressure bandage.

Luedde W H Factors Determining the Choice of Operation in Glaucoma *Am J Ophth* 1924 35 vi 353

It is generally believed that the establishment of the permanent drainage essential for the cure of glaucoma is best assured by a filtering cicatrix covered by the conjunctiva and the superficial lamellæ of the cornea at the limbus combined in most cases with an aseptic iridectomy maintaining a free passage from the circumferential space into the anterior chamber and if possible into the canal of Schlemm. Luedde gives the following rules for the procedure he uses

Make a large thick conjunctival flap according to Elliot's method. Split the cornea at the limbus for 1 or 2 mm. Make a 2 mm wide oblique keratome incision through the cornea into the anterior chamber at the lower margin of the flap (may beveled valve like perforation). Enlarge the initial opening laterally with the round tip of a thin bladed scissors (winged keratome incision). A large or small iridectomy may be done or none at all. In addition to a simple iridectomy detachment of the ciliary body from below backward according to Forch's method may be done.

Special emphasis is placed on the element of safety provided in this operation by the gradual reduction of excessive intra ocular tension through the small initial keratome incision when slight pressure is made on the upper lip of the opening with a spatula. L. L. McCoy M D

Cords R Cyclodialysis the Best Operation for Simple Glaucoma *Am J Ophth* 1924 35 i 341

Cords considers cyclodialysis the best operation for simple glaucoma. This conclusion is based on his experience with iridectomy, sclerectomy and trephining at the University Clinics in Leipzig, Bonn and Cologne. For cutting the sclera he uses a Graefe knife instead of a keratome. In separating the ciliary body from the sclera he employs Eschsch's stylet. For several days after the operation he performs careful massage. The operation is done in all cases with a constant or periodical increase in the tension and in the cases of patient who are not careful in the use of miotics. Cords regards cyclodialysis as the best operation because

1. It is easy and without danger.
2. There are few postoperative complications.
3. The effect of the procedure on the tension and vision are very satisfactory.
4. One operation is usually sufficient and if it is not the procedure can easily be repeated.
5. In refractory cases any other operation can be done afterward.

Complications following cyclodialysis are few and with the exception of one increasing tension are unimportant. An increase in the tension usually begins to decrease again on the second or third day but in rare cases this occurs only after the eighth or tenth day. In some instances the influence of the

operation on tension is sometimes only transitory a late increase being observed after weeks or months. After iridectomy an increase is very common. A lasting good result is obtained by iridectomy in from 15 to 71 per cent of the cases. Cyclodialysis gives such a result in 58 per cent of the cases.

In conclusion the author makes the following statement

The dangers of cyclodialysis are so few and the results are so encouraging in glaucoma simplex that in my opinion the operative treatment should always be commenced with this operation.

L. L. McCoy M D

Gifford S R A Further Note on Ocular Sporotrichosis *Arch Ophth* 1924 11 264

In the case reported a pimple appeared spontaneously over the lacrimal region and increased in size until it involved one third of the lid and formed a fistula at the inner angle. The tear passages were not affected. Cultures showed sporotrich colonies.

Large doses of potassium iodide were given internally; the area was soaked with Lugol's solution and 4 minims of a 7 per cent solution of potassium iodide were injected with 2 per cent cocaine about the lesion. Healing occurred in six weeks.

VIRGIL WESCOTT M D

Butler T H Observations on the Practical Value of the Slit Lamp *Bull J* 1924 1 945

The use of the slit lamp supplements our older technique of examining the eye but does not supersede it. Butler describes in detail his method of examining the cornea, anterior chamber, iris, lens, vitreous and retina and in nineteen photographs shows some of the normal and pathological conditions seen with the slit lamp.

ALBERT H PEMBER M D

Butler T H On the Visibility of the Actual Blood Stream with the Ordinary Loupe *Arch Ophth* 1924 11 267

Butler has found it possible to study the blood stream in the vessels of the anterior segment of the globe by focal illumination and the ordinary loupe as well as by means of the more expensive slit lamp which causes dazzling that is annoying to the patient. By the substitution of a point of light lamp for the slit lamp and the use of a condensing lens free from aberration retro illumination is obtained from reflection on the iris and the column of blood in pannus may be studied.

VIRGIL WESCOTT M D

Byers W G M A Case of Encapsulated Angioma of the Orbit *Am J Ophth* 1924 11 80

The author removed an encapsulated angioma from the orbit of a man who stated that the growth had developed to its present size in 10 years. The unusual features of the case were that the tumor developed in the anterior portion of the orbit and the connective tissue elements of this angioma as

represented by the capsule and trabeculae were very marked

In support of the contention that there is a connection between the location of angiomas and the vascular supply of the orbit and between the histological character and the distribution of the connective tissue of the orbit Whitnall adds a summary of the anatomical findings in the orbit

VIRGIL WASCOTT M D

## EAR

ERSNER M S Studies of Mastoid Disease by the X Rays with Clinical Observations and Operative Findings *Laryngoscope* 22: 321

PFAHLER C E Studies of Mastoid Disease by the X Rays with Operative Findings Demonstration of a Special Localizer *Laryngoscope* 22: 339

ERSNER states that the X ray makes possible a comparative study of the normal and the diseased mastoid shows the type of mastoid the topographical and regional anatomy the cellular distribution of the type of cells and the position of the sinusoids surrounding areas and aids in the diagnosis of atypical mastoid cavity formation perimastoid abscess epidural abscess bilateral suppuration and sclerotic mastoid

He reports nineteen cases giving the history and the clinical roentgen and operative findings His conclusions are as follows

1 X ray examination is indicated as a routine measure

2 It is important to clean the area to be X rayed as ointments which have been used may contain metallic substances which will produce shadows

3 The progress of mastoid disease can be watched by means of X ray examination made at three day intervals

4 When the lateral sinus shows haziness or completely disappears from view under conservative treatment necrosis of the anterior bony wall with a perimastoid abscess may be suspected

5 It is especially important for the novice to take routine X ray examinations as from the result will learn the topographical and regional anatomy of the mastoid

6 The angle from which the mastoid picture was taken must be understood as the view the clinician will must interpret some of the shadows

7 Cavity formation appears as a blurred area without septa and with irregular edges A large normal cell shows distinct edges and septa

8 In the cases of children the administration of chloroform may be necessary to obtain good roentgenograms

9 In children in which the cells are not fully developed plates of the posterior canal wall should be studied as in this area the bone is thicker and the antrum has one or two cells and any disease present will be visible

10 In mastoid disease both mastoids should be X rayed and compared

11 In bilateral suppuration on both plates should be studied and the side showing the most advanced disease should be operated upon first

12 The operative findings in one mastoid will usually aid in the interpretation of the plates of the opposite side and in the decision as to the procedure to be followed on the other side

13 Repeated roentgen examination will show whether the disease is at a standstill or is progressing or is undergoing sclerosis

14 The operative findings often do not agree with the roentgen picture because use after the roentgen examination has been made the operation is delayed

PFAHLER states that the mastoids are generally symmetrical and are of two types (1) non cellular mastoids which have three subtypes—the undeveloped or infantile the diploetic and the sclerotic (2) pneumatic or cellular mastoids A satisfactory roentgenogram shows the external auditory meatus the internal meatus the mastoid antrum the tympanic middle ear joint and usually the outline of the lateral sinus as well as the middle and posterior cranial fossae

Successful roentgenographic examination depends upon good films correct interpretation and proper correlation of the X ray and clinical evidence Good films are dependent upon absolute fixation of the head the passage of the central ray directly through the auditory canal sharpness of detail and proper exposure

MILLIGAN Sir W The Surgical Treatment of Suppurative and Certain Non-Suppurative Affections of the Labyrinth *J. F. G. Otol.* 9: 424

The author describes the various types of labyrinthitis and briefly outlines his method of dealing with each

The fact that ossification of the labyrinth is involved does not necessarily mean that the disease has extended to the other therefore if surgical measures are indicated care should be taken to disturb the non-infected or only partially infected area as little as possible

As a rule purulent disease of the internal ear results from disease of the middle ear and then usually from one of the chronic infective processes and seldom from the acute infectious processes

Labyrinthitis associated with a te middle ear infection is almost invariably of the acute serous variety

In cases of circumscribed labyrinthitis of the external semicircular canals the most frequent portal of entry of the infection In cases of diffuse purulent labyrinthitis the portal of entry is usually the fenestra ovalis

While cases of circumscribed labyrinthitis should be left alone cases of diffuse purulent labyrinthitis call for prompt and efficient surgical treatment

When the stapes of the labyrinth is the site of the purulent process it is the author's custom to excise the stapes and remove

merely the pars promontoria without disturbing or in any way interfering with the columella.

In the cases of apparently healthy persons with sudden and violent attacks of vertigo sickness, tinnitus and loss of hearing, partial or complete destruction of the labyrinth is done. In a series of twenty such cases there were no deaths. The vertigo was cured completely in all and the tinnitus in about 40 per cent. The tinnitus was partially relieved in 20 per cent and not relieved in 40 per cent.

WILLIAM B. STARR, M.D.

Kerr, J. P. D. The Treatment of Deafness. *M. J.* J & R 974 vi 433

The author believes that whatever increases the general vitality tends to improve audition and whatever gain in hearing accrues from such means must be attributed to better function of the nerve rather than improvement in sound transmission.

In the treatment of deafness all sources of nerve depression or injury should be removed.

In Kerrison's opinion routine catheterization is dangerous to hearing as it may cause pathological changes in the membrana tensa. Routine or too frequent use of eustachian bougies or sounds is also not without risk as it may result in subacute reactions in the tubal mucosa.

In the treatment of advanced deafness it is necessary to bear in mind that the acoustic nerve is involved as well as the conducting mechanism. In attempts to treat affections of the acoustic nerve care must be taken to avoid injuring the conducting mechanism. In selected cases the acoustic nerve may be treated by stimulation by administration of drug, the limitation being no agencies and regulation of the patient's metabolism.

J. M. T. R. M.D.

## NOSE AND SINUSES

Dowling, J. I. The Relation of the Maxillary Sinus to Ocular Diseases. *Lar. & P.* 943 i  
Crane, C. G. N. Accessory Sinus Infection and Orbit Disease. *Lar. & P.* 944 74

Dowling states that in the pharyngeal variety of inflammation in children it is important to neglect the infection of the accessory sinuses frequently the intraethmoidal wall is inflamed. In this infection the sphenoidal, the ethmoidal, the maxillary, the frontal and the sphenoidal sinuses are involved.

Cases of infection of the frontal, maxillary, or ethmoidal sinuses frequently have a nasal upper half of the nasal orifice is the initial point of infection. Infection of the maxillary sinus is then associated with inflammation of the lower half of the nasal cavity and possibly the nasal mucosa.

Untreated inflammation of the maxillary sinus is a local disease which may lead to an infection of the frontal, maxillary, or ethmoidal sinuses.

As the maxillary sinus is the chief factor in the chronicity of the disease, removal

of the sinuses, ocular complications will be relieved only after the maxillary sinus infection has been overcome. With relief of the maxillary sinus drainage of the anterior ethmoid cells and frontal sinus is often reestablished without any operative procedure for that purpose.

Crane states that orbital cellulitis is a direct extension of infection from the ethmoidal area. The bony partition separating the ethmoidal and sphenoidal cell from the orbit and optic nerve canal is thin and the perosteum on either side is connected by numerous diploic veins. The perosteum in the optic canal is inseparable from the sheath of the optic nerve and in some cases there is a dehiscence of the bony wall between the optic nerve and some of the cells mentioned. Another factor favoring the spread of infection is the relationship of the blood vessels of these parts. In cases of orbital disease of nasal sinus origin Crane exenterates the phenothmoidal cell area completely.

WILLIAM B. STARR, M.D.

## MOUTH

Brophy, T. W. Fundamental Principle and Recent Conclusions in the Surgery of Congenital Cleft Palate. *J. & P.* 944 i 37

In order to obtain the best results in speech an facial contour in cases of congenital cleft palate operation should be performed early. Brophy's technique is divided into four stages: (1) freshening approximation and immobilization of the cleft bones; (2) closure of the lip; (3) closure of the soft palate; and (4) elevation of the nose if flattening results when the premaxilla is moved back.

The freshening approximation and immobilization of the cleft bones should be done as soon after birth as is expedient. The most satisfactory period is between the fourth and the tenth weeks since in an otherwise normal child all functions of the body have become fairly well established by that time.

Closure of the lip should be done in from six to ten weeks after the bones have been approximated.

Closure of the soft palate should be deferred until just before speech is attempted. That is it should not be done earlier than the eighteenth month.

Rotating the premaxilla should be treated as a recent fracture. Under no circumstances should the premaxilla be removed as these bones together with the teeth which they embrace give a normal contour to the face and their locomotive prognathism with its unsightly deformity. In prognathism the upper lip recedes the nose becomes broadened and flattened and the upper arch becomes contracted so that the upper teeth occlude on the lingual surfaces of the lower teeth.

The premaxillary bone should be moved into place and immobilized after freshening of the surfaces which are to come in contact. The compact bone should be removed. The soft tissues covering the bone should be sutured with horizontal lines and the vomer and moving of the premaxilla



back without any attempt to unite the maxilla can not produce a normal arch and may be likened to the treatment of a fracture elsewhere without assuring bony contact. **MATTHEW N. FEDERSPIEL, M.D.**

**Pertile, J. A.** Malignancies of the Oral Cavity. *J. Ch. Med.* 1924. 153

In cases of malignant tumor in and about the oral cavity there is almost invariably a history of chronic irritation preceding the development of the neoplasm.

A greater number of slowly growing or relatively benign malignant tumors occur in the oral cavity than in any other part of the body.

In malignancy of the oral cavity metastasis beyond the cervical lymph collar is rare. Not more than 10 per cent of persons who die of cancer of the oral cavity present other lesions than those which develop by continuity of tissue and cervical malignant lymphadenoma.

The percentage of cure is higher for cancers of the lip than for cancers in any other location.

In a series of 1,890 cases of cancer of the lip and cheek Strauss found that cancer of the lower lip occurs thirteen times as frequently as cancer of the upper lip.

In cancer of the lip tongue or floor of the mouth the cervical lymphatic glands are involved early, whereas in cancer of the mucous membranes of the cheek or of the gum they usually do not become involved until late. **WILLIAM B. STARR, M.D.**

### PHARYNX

**Lott, H. H.** Tonsillar Focal Infection. *A. N. Diagnostic Point.* 5, 1, Cl. 4, 1m. 94. 66

The author has found that in such conditions as arthritis and neuritis tonsillitis may give disorders when the infecting organism is streptococcus but that when the tonsillar focus shows chiefly staphylococci and pyogenic organisms other than streptococci a cure is not obtained.

The new diagnostic point which Lott calls attention to is the appearance of the inflammatory zone on the anterior pillar in front of the tonsil. In streptococcal infection the anterior pillars show a narrow sharply limited and very dark red zone, while in infections in which staphylococci do not predominate there is a broader and paler red zone which fades off gradually into the velar mucosa with at any perceptibly defined boundary. Two cases are reported to illustrate these findings.

**FRENCH K. HANS, L. M.D.**

**Lansdown, G. H.** Indications for Tonsillectomy with a Criticism of the Operation. *C. J. W. As. J.* 94, 31. 379

The author gives the indications for tonsillectomy as follows:

1. To sils which interfere with respiration, deglutition or voice production.

2. Tonsils which interfere with the normal passage of air into and from the middle ear by way of the eustachian tube either by displacement of the palate or by direct obstruction.

3. Tonsils which are a focus of infection as indicated by cultures.

The operation should be preceded by thorough cleansing of the teeth and mouth.

A competent anæsthetic and the use of the finger dissection on method of enucleation are essential for successful results. **STEPHEN A. SCHUSTER, M.D.**

**Wright, A. J.** Specimen Section and Drawing of Case of Mycosis Fungoides Involving the Pharynx and Larynx. *Ir. R. Soc. Med. Lond.* 94, 5. S. 1, 1, 1, 1, 44

The patient from whom the specimen was taken was a man 34 years of age who consulted Wright first on October 22, 1923, for huskiness of the voice. Examination at that time revealed small tumors in the folds of the vocal cords. The pharynx was clear. Two weeks later the nasopharynx was blocked. Death occurred from exhaustion and pharynx December 13, 1923. In addition to general enlargement of the lymphatic glands and multiple tumors in the skin pharynx and larynx there was involvement of the mucosa of the bronchi. **OTTO M. KOTT, M.D.**



Mycosis fungoides of the pharynx

## NECK

Saberton, C. W. S. The X-Ray Treatment of Hyperthyroidism *B. I. W. J.* 1924 1 66

Fourteen years experience in the roentgen treatment of hyperthyroidism has convinced the author of the value of this treatment. In three of every four cases of female patients in whom the disease has not lasted long enough to produce myocardial degeneration there is recovery of the general health and functional activity of the gland. As a general rule males do not respond so readily. In some of the cases which fail to respond to radiation other endocrine glands are probably involved in all cases it is wise to include in the field of radiation the area of the thymus gland.

In doubtful cases roentgenotherapy is not advisable unless the basal metabolic rate indicates definitely that the condition is hyperthyroidism. The determination of the basal metabolism of value also as a guide to the progress of the case.

Although the enlarged thyroid gland may not be reduced in size by radiation and although the exophthalmos frequently persists the pulse rate becomes slower and the dyspnoea, tremors, excessive perspiration, insomnia and general malaise gradually disappear and the patient gains weight. The weight goes up as the pulse comes down and a careful record of these serves as a guide to progress.

The following technique has given good results. Two thirds or three fourths of a Sabouraud B

lose measured after filtration through 2 mm of aluminium given with a Coolidge tube backing up 19 in spark gap is applied to each side of the neck once a week. From twenty to thirty radiations are given in the average case. Radiation is stopped before the heart comes down to normal as its effect is cumulative and continues for several weeks after it has been stopped.

Several illustrative cases are cited. In about 5 per cent of the cases treated there was marked improvement and in about 50 per cent the symptoms of hyperthyroidism disappeared.

Untoward effects were noted in only a few instances. One patient treated twelve years ago when the technique had been less perfectly developed a serious skin lesion. Two others showed evidences of myxedema after the treatment but it was highly improbable that the radiation was the cause in either case. Roentgen therapy was found unsatisfactory in cases in which symptoms of hyperthyroidism supervened upon an old large parenchymatous adenoparenchymatous or cystic goiter. These cases should be referred to the surgeon especially if there is pressure on the trachea.

Having observed the undoubted value of carefully applied roentgen ray treatment in Graves disease the author believes that because of its risks operative treatment should never be undertaken until the X-ray has been given a fair trial and has caused no improvement.

ADOLPH HARTUNG, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Tritter W. Certain Minor Injuries of the Brain  
B. M. J. 1924: 186

The author discusses serious headache as a sequel of slight or apparently trivial head injuries.

There are two principal types of cases of minor head injury without fracture of the skull. In one the accident is a fall on the head causing momentary unconsciousness followed by dizziness and headache which usually cease in a few hours. In the other type of head injury the violence is limited to a certain area of the skull loss of consciousness does not occur and only minor functional disturbances are manifest.

Traumatic headache may continue from the time of the accident but more commonly begins with the resumption of active life. It occurs in attacks lasting for from a few hours to several days. Exertion, excitement, anxiety, fatigue, etc., initiate or increase the pain and sound sleep will often cause its disappearance. As a rule physical examination reveals nothing of consequence.

The author believes that this type of headache has a definite organic basis such as the stretching of the meninges from edema or hemorrhage, changes in the intracranial pressure or distortion of the skull. It is not due to psychoneurosis since in the production of a neurosis actual memory of the accident is essential.

In the prevention of this malady a definite period of rest in bed following a concussion of the brain and very slow resumption of duties are essential. Even with adequate initial treatment headache may occur and further rest periods may be necessary. A night subtemporal decompression is practically always successful but in some cases a decompression over the contusion is indicated.

WILLIAM P. VAN WAGEN, M.D.

Sajou C. E. de M. The Hypophyseobasal Area in Its Relation to the Pathogenesis and Treatment of Diabetes Insipidus and Polyuria (Including Study of Thirty Autopsies). *Am. J. U.S.* 1924: 60

Recent experimental work has demonstrated that the generally accepted theories regarding the functions of the posterior lobe of the hypophysis are erroneous.

The investigations of Camus and Ruyssard others demonstrated that the posterior lobe of the hypophysis takes no part in the pathogenesis of diabetes insipidus or polyuria; they show only that lesions of the tuber cinereum can produce these disorders and that the latter can be produced with-

out the participation of a secretion from the hypophysis.

At the base of the brain is a nuclear aggregation which the author calls the hypophyseobasal area. This is the central starting point of a nerve path which descends to the kidneys by way of the bulb, the cord and splanchnic nerves.

Experimental data show that the inhibition or arrest of physiological impulses through the hypophyseobasal path to the vessels of the kidneys causes passive dilatation of these vessels with resulting abnormal excitation of the renal cells by the excess of arterial blood and as an end result polyuria.

The beneficial effects of preparations of the posterior lobe of the pituitary gland are accounted for not by a secretion or hormone in these products but by their recognized power of constricting the arterioles, thus counteracting in the kidneys the dilatation of these vessels which is the cause of diabetes insipidus and polyuria insofar as their relationship to the hypophyseobasal nerve path is concerned.

CRAIG J. GLAS, M.D.

Pinney A. and Coates I. Metastatic Carcinoma of the Pituitary Gland and Diabetes Insipidus. *J. P. H. & G.* 1924: 21

The case reported was that of a 40-year-old woman who gave a history of severe polyuria and presented evidence of some hyperthyroidism and slight enlargement of the left cervical glands. Two years previous to examination she had been operated upon for carcinoma of the left breast. She was admitted to the hospital in a comatose condition and the polyuria persisted until death a few days later.

At autopsy metastases were discovered in the left cervical glands, the mediastinal fat, the left adrenal and many parts of the cerebrum and cerebellum. The pituitary gland was slightly but definitely enlarged and on sagittal section was found to be almost circular. Its posterior lobe, which was a dense, white and homogeneous collection of masses of acidophilic cells. Only one vessel containing colloid was found. The anterior lobe, which was not invaded by the carcinoma, was a dull red. The posterior part showed compression and abnormal predominance of basophilic or eosinophilic cells. The comparative absence of eosinophilic cells which were reported to be the resting stage of the posterior pituitary cells and the supplanting of the posterior and middle lobes of the pituitary by chromophilic cells appeared to substantiate the contention of von Hanau and Jacoby that the substance or substances responsible for diabetes insipidus are produced in the anterior lobe and that when the posterior lobe is destroyed or injured. K. UR. H. H. C. M. D.

### Berry G. Brain Abscess of Paranasal Sinus Origin Two Cases La J. J. Cop 924 xv 1 346

In the two cases reported there was drainage through the nose but the condition proved fatal. In the first case the suppuration was a temporoparietal abscess of sphenoidal origin which after exploration of the sinuses drained into the nose spontaneously but incompletely. At operation the site of this drainage was obscured by necrosis of bone in the floor of the pituitary fossa. The abscess was inaccessible to other operative routes as it was medial to the ventricles except in the temporoparietal lobe where it might have been tapped with a straight trocar.

In the second case the lesion was an abscess in the frontal lobe of ethmoidal origin. This was drained intranasally at operation. A recurrence four years later was not dangerous because of the neurotic tendency of the patient and a history of insanity in his family. Death occurred from meningitis following rupture of the abscess into the ventricles.

MANFORD R. WALT, M.D.

### SPINAL CORD AND ITS COVERINGS

Beclere A. Case of Syringomyelia Treated with X-Rays Twenty Years Ago (Univ. of Chicago Med. J. 1914) 943 1 64

In this case on which it is best to spread the dose of X-rays over a period of days, the results are in proof of the effectiveness of X-ray treatment in the human result of syringomyelia. The author obtained by means of repeated doses of shallow penetration and unfilled. He knows of many similar cases. While admitting that great progress has been made in the physical field of deep X-ray treatment, he believes that biological and therapeutic aspects of the application of intense X-ray treatment are not yet well understood.

W. A. B. E. N. A.

### PERIPHERAL NERVES

Commander U. S. Navy. Old Total Obstetric Brachial Plexus Paralysis. Result After Twenty Eight Years (Ann. Surg. 1914) 1111 1 1

The patient, a 28-year-old woman who entered the hospital for childbirth. In giving her history she stated that she was born after a very long labor because of a small presentation. Since her birth she has had paralysis of the upper right arm.

Examination revealed atrophy of the bone of the upper arm and of the scapula very marked atrophy of the muscles of the right shoulder and arm. Mobility of the right hand with moderate flexion of all of the fingers and adduction of the index finger. No emaciation of the shoulder and forearm was observed.

In the forearm flexion was almost complete but extension was possible to only 135 degrees. The right hand was shorter than the left. There was no active pronation and only slight passive pronation. Atrophy of the motor muscles of the hand was very pronounced.

The patient used her right arm very well her chief complaint being inability to pronate the hand and awkwardness due to its forced supination. In spite of these defects she was able to hold a pen and to write moderately well. She was able to sew but crocheting which requires complex movements was impossible.

SALVATORE DI PALMA, M.D.

Miller O. L. Neurectomies (Stoessel Operation) in the Treatment of Spastic Paralysis. S. J. M. & S. 943 1 20

This article is a preliminary report on forty-six neurectomies of motor nerves (Stoessel operation) performed in the treatment of fifteen cases of spastic paralysis. Cases of this type include diplegia, paraplegia, hemiplegia and monoplegia. These conditions are due to various causes and are frequently associated with mental impairment and are often so disabling and deforming as to justify heroic measures for their relief. In the past they have been unsatisfactorily treated by tenotomy, tendon transplantation, resection of posterior nerve roots, cranial decompression and the injection of alcohol into the nerves.

The purpose of partial resection of motor nerves (the Stoessel operation) is to interrupt the excessive nerve impulses to the spastic muscles and thereby to weaken them so that an equilibrium may be obtained between normally opposing groups.

Miller has successfully operated in this way upon the median, sciatic, ulnar and internal popliteal nerve. He recommends the treatment whenever the case falls into the proper neurological group and the child has a fair to normal mentality. After the operation associated measures such as lengthening of the heel cord or stabilization of the foot may be necessary. For maximum improvement efficient after training by a competent physiotherapist is essential.

L. M. ZIMMERMAN, M.D.

### SYMPATHETIC NERVES

Henry A. K. A New Method of Resecting the Left Cervicothoracic Ganglion of the Sympathetic in Angina Pectoris. J. M. & S. 924 5

The removal of the cervicothoracic ganglion of the left side appears to be sufficient to suppress anginal pain due to atheroma of the proximal aorta. The operation of sympathectomy was suggested by Franck who believed that in certain cases the anginal syndrome might be due to afferent impulses traveling up from the aorta by way of the cervicothoracic portion of the sympathetic chain.

Impulses such as those from a viscous gland to pain which is referred not to the viscous concerned but to somatic areas innervated by the segments of

the spinal cord receiving the impulse. This explains the pain in the left arm and the left side of the chest. By radiation the pain may spread to the neck and opposite side of the body.

Frank concluded also that death in angorinal attacks might be due to vasoconstriction in the medulla. This assumption is based on the fact that the inferior cervical ganglia send out thick branches which accompany the vertebral arteries. When the latter unite to form the basilar artery and send filaments to the pons and medulla.

In performing sympathectomy for the relief of anginal pain J. J. J. interrupted the afferent impulses from the aorta which are responsible for the pain of the seizures and in removing the cervicodorsal ganglion cut the filaments which accompany the vertebral artery and carry constrictor impulses to the medullary vessels. He used the anterolateral route of approach. The author employs a posterior route which he describes in detail.

S. MUELKA M.D.

### MISCELLANEOUS

Danis R. The Treatment of the Late Complications of Spinal Puncture by Epidural Injections (Tratamiento de las complicaciones tardías de la punción espinal por inyecciones epidurales) *P. S. Med.* 1944 434

Late complications of spinal puncture such as headache, vomiting, and paralysis of the external oculomotor nerve are due generally to the persistence of the meningeal fluid and the loss of cerebrospinal fluid. The incidence of these complications may be increased by the use of a fine lumbar puncture

needle by making a single puncture and by holding the bevel of the needle in the axis of the column so that laceration of the dura mater will be minimal.

Treatment by the intravenous injection of hypotonic or hypertonic solutions is not logical. The stimulation of the secretion of cerebrospinal fluid by hypotonic solutions to replace the lost fluid increases the pressure and tends to keep the puncture wound open. In the absence of intracranial hypertension injections of hypertonic solutions deplete the cerebrospinal fluid still further.

A correct therapeutic method will maintain the intracranial pressure at such a level that the edges of the puncture wound remain joined and become healed. The author believes that the epidural injection of physiological salt solution constitutes such a method. When copious the injected fluid ascends very high and compresses the meningeal sac on all sides forcing back the contained fluid toward the brain. The dura mater fibers torn by the needle are relaxed and close together.

The method advocated consists in the epidural injection of from 50 to 100 c.c. of isotonic salt solution following the induction of light epidural anesthesia by means of novocaine. The best dose is from 80 to 100 c.c. of the salt solution and 5 c.c. of 1 per cent novocaine.

From the results in ten cases of late evoked headache the author concludes that the epidural injection of physiological salt solution is a harmless and efficacious method of treating the late complications of spinal puncture. It is not a preventive method however and should not be used at the time of the original spinal puncture as the anesthetic might then be forced too high. WALTER C. BLAIR M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Short A R Cancer of the Breast *Bull Med Ch J* 1924 xli 64

The author believes that cancer of the breast is definitely increasing. At the present time 75 per cent of women over 35 years of age may be expected to have cancer and 75 per cent of this number will have cancer of the breast. The majority of breast cancers arise from the epithelium of the ducts rather than that of the acini and occur in breasts showing hyperplasia of epithelium—the proemial breast of Cheate.

The proemial breast feels firm and irregular with little lumps here and there. At times it may be painful especially during menstruation and the areola may be reddish or bloody discharge from the nipple. The highest incidence of the condition is between the twenty-fifth and forty-fifth year of age. The cause is obscure. The treatment is expectant. Cancer occurs most frequently in non-lactating and unsuckled breasts. Heredity has no influence. Scirrhus cancer is best treated by radical amputation, encephaloid carcinoma by X-ray irradiation followed by removal of the breast.

In the 106 cases operated upon by the author there was one postoperative death. Of fifty patients treated for three years or more twenty-five are alive and well. Five are alive and well more than eight years after the operation.

WILLIAM T. VAN WAGENEN, M.D.

## TRACHEA, LUNGS AND PLEURA

McCrae T. The Clinical Feature of Foreign Bodies in the Bronchi. *Lecture I, II and III*. *Lancet* 1914 94 773, 885.

Foreign bodies gain entrance to the bronchi much more frequently than is generally believed.

The symptoms at the time of aspiration vary greatly. They are usually marked if the foreign body remains in the trachea and especially if it is movable. In some cases there are no symptoms. Absence of symptoms has often led to the faulty conclusion that no foreign body is present. As a rule infants and young children react more severely than older children and adults. The symptoms are always induced by trauma and infection.

Foreign bodies in the trachea cause dyspnoea, cyanosis and a cough which is usually paroxysmal. As a rule there is a loud wheeze more intense and of a higher pitch than the wheeze of asthma. On auscultation the breath sound is harsh and loud.

The diagnosis of foreign body in the trachea is not difficult if there is a definite history of choking when an object was held in the mouth. When the foreign

body is opaque the X-ray is of great aid. Diphtheria is often confused with the presence of a foreign body in the air passages.

The symptoms and physical findings in cases of foreign bodies in the bronchi vary with the size, shape and the character of the bodies. When a foreign body lodges in a bronchus it may plug the bronchus completely in which case a combination of pulmonary collapse and increase of fluid content develops. If it allows air to pass in but not out obstructive emphysema results. When there is partial blocking of the bronchus there is usually decreased expansion on the affected side with diminished vocal fremitus and rough breath sounds. Other factors which operate to a varying degree are the amount of swelling of the mucous membrane, the presence of granulations, the amount of secretion, shifting of the foreign body and the effects of a previous bronchoscopic examination especially an examination unskillfully done.

The character of the physical signs depends upon the nature of the foreign body, the amount of irritation and inflammation it has caused and the presence or absence of secretion. These signs are apt to change from hour to hour. The examination should include inspection, palpation, percussion and auscultation. Vegetable material such as peanuts, grains of corn, etc. are especially liable to bring on acute and serious symptoms.

The complications include pneumothorax, empyema, bronchial stricture and hemorrhage. Bronchiectasis and abscess formation are regarded more as sequelae than complications.

The presence of a foreign body in the trachea or bronchus should be considered in every case of respiratory tract disease which shows unusual features. A negative history does not always rule it out. The symptomless interval after the initial symptoms is responsible for many erroneous diagnoses. In many cases diagnosed as pneumonia and pulmonary tuberculosis the condition is due to a foreign body.

Acute cases are usually caused by foreign bodies of a vegetable nature. The symptoms are severe, toxæmia often being very marked. These cases are usually confused with diphtheria and pneumonia. Direct laryngoscopy, cultures and careful clinical and X-ray examinations of the chest should be made. In cases of non-opaque foreign bodies the X-ray diagnosis must be based on a study of the changes in the lungs.

The chronic case must be differentiated from foreign bodies in the œsophagus, bronchopneumonia, aneurism and enlarged mediastinal glands.

When a foreign body enters the trachea or bronchus it seldom is expelled spontaneously. Nearly

any object can be removed by skilled hands. The mortality is about 1 per cent. In case in which the foreign body is a nut the prognosis is serious even after careful removal. Age and the length of time the foreign body has been present are also factors of importance in the prognosis.

Removal of the foreign body is indicated. Efforts to favor removal by inverting the patient are contraindicated because of the danger of impacting the foreign body in the glottis. With regard to tracheotomy no set rules can be laid down. It is better to perform several possibly unnecessary tracheotomies than to lose a patient by delaying the operation too long. Cases should be thoroughly studied unless the condition is very acute and serious and due to a vegetable substance. No special preparation is required for bronchoscopic examination. In tracheal hands bronchoscopy appears to give the best chance for recovery. CYCL J. GLASSER, MD.

Whitmore W. The Etiology and Treatment of Non-Tuberculous Pulmonary Abscess. *Surg. Gynecol.* 1914, 3, 1, 45.

One hundred cases of non-tuberculous lung abscess are reviewed. In sixty-six the condition followed a respiratory tract operation performed under general anesthesia (forty-eight tonsillectomies, twelve teeth extractions, two operations for the drainage of septic sinuses, one adenoidectomy, one operation for deviated septum, one operation for fractured nose and one tracheotomy). In twenty-two cases the suppuration followed pneumonia, in three a septic infarct and in one a bronchoesophageal fistula. Other causes were operations on malignant growths of the jaw and tongue and extensions of extrapulmonary foci (subdiaphragmatic or mediastinal abscess, empyema ruptured into the lung, foreign body aspiration of infected water, etc.). In eight cases the cause was not determined.

Expectant treatment including posture and other non-operative measures resulted in a cure in from 10 to 30 per cent of the cases. During steady improvement expectant treatment may be continued.

Artificial pneumothorax may cure in a very small number of cases, but is applicable only if the lung and parietal pleura are not adherent. It is an excellent means of determining the presence of adhesions. However, after temporary relief the paroxysms of coughing may recur and there is danger of a embolism and tearing of adhesions with resultant emphysema.

In a very few cases early aspiration of the abscess by means of the bronchoscope may effect a cure.

Surgery is indicated when other treatment fails. Too long delay of operation may result in brain abscess, meningitis, epistaxis, ataxia, and the process to the other lung or fatal hemorrhage. The more chronic the condition the more difficult the cure. Abscesses near the periphery of the lung are reached best by operation. The correct approach should be determined carefully by physical and X-ray examinations.

Case with adhesion of the visceral and parietal pleura should be operated upon under local anesthesia. Anæsthetization of the skin and local blocking of the intercostal nerves by novocain are sufficient for resection of one rib. For resection of several ribs paravertebral anesthesia is preferable. If the abscess is situated in the anterior part of the lung paravertebral and local anesthesia may be used. The abscess should be opened at once, the finger inserted to break up pockets, and a soft rubber drain introduced. When an abscess is opened with the cautery blood vessels which are scarred over may bleed when sloughing occurs. Acute abscesses drain for four or five weeks, chronic abscesses for from three to six months or longer.

If there are no adhesions, some form of differential pressure anesthesia is advisable, such as that induced with Sauebruch's negative pressure chamber, the Meltzer and Auer intratracheal insufflation, paravertebral insufflation or a mask apparatus (nitrous oxide oxygen machine mask). A negative pressure apparatus prevents collapse of the lung and mediastinal changes. In addition it facilitates suture of the lung to the chest wall. When the lung is not adherent the author locates the abscess by palpation, sutures the lung to the chest wall, places gauze against the abscess area and then closes the wound. If after from three to five days adhesions have formed he reopens the wound and drains the abscess.

In the literature the mortality of tuberculous abscess of the lung is given as from 15 to 70 per cent. In 1923 the author reported fifty-two cases with mortality of 15 per cent. From 60 to 70 per cent of the cases operated upon were cured or permanently benefited. The long-standing chronic cases with permanent fistula were also improved. Five per cent of the patients leave the hospital in excellent condition, but after a few months develop a cough with expectoration and slight hemorrhage and finally die of severe hemorrhage. The operative results are influenced by the location of the abscess, the age and general condition, and other factors.

In conclusion the author states that the technique of operations performed upon the upper respiratory tract under general anesthesia should be such as will reduce the danger of lung infection to the minimum. WALTER C. BURKE, MD.

Bull P. Rivie C. Davie H. M. and Others. The Surgical Treatment of Pulmonary Tuberculosis. *Proc. Roy. Soc. Med. Lond.* 1914, 7, 4, 51.

The handling of tuberculous processes is effected by a rule by the development of fibrous tissue with scarring and retraction. In the lungs maximum shrinkage depends upon collapse of the lung and this can be effected by gas inflation if there are adhesions between the pulmonary and the parietal pleura. When adhesions are found extra pleural thoroplasty is indicated.

Before thoracoplasty is performed the health, lung maturity, and freedom from symptoms. Bull

regards conditions as favorable for the operation when symptoms in this lung have entirely disappeared or for a long time have remained stationary and of slight extent. An X-ray examination of both lungs is essential.

Slight involvement of the larynx or of one kidney is not a contra-indication to operation. Absolute contra-indications are advanced tuberculosis in the other lung and any general condition which prevents a serious surgical procedure.

Before the operation the patient should be kept under observation and given treatment at a sanatorium. If possible the operation should be performed before cavitation has taken place. However the cavitation form of the disease has a much more favorable prognosis as regards permanent cure after thoracoplasty than does the infiltrating form.

At operation the patient is placed upon his normal side with a sandbag to press up the diseased side. The hook-shaped Sauerbruch incision is used. Resection should always be made from the tenth or eleventh rib up to the first rib. It is sufficient to resect from 6 to 7 cm. of the eleventh rib, 12 cm. of the tenth and ninth and 15 cm. of the following ribs up to and including the fourth rib. Of the three uppermost ribs as much as possible should be taken. The amount of rib resected varies from 90 to 180 cm. It is important to resect the ribs as far back as possible beyond the costal angle clear up to the costal tubercle and the point of the transverse process. The criterion of a perfectly performed thoracoplasty is the ability to feel the posterior margin of the scapula lying in front of the posterior end of the resected ribs.

Bull always performs a pectoralis major flap to collapse the apex of the lung by freeing it from the thoracic wall. This step is of value also because it facilitates the resection of the upper two ribs. The muscles and skin are stitched separately. Very often a large glass tube is placed in the lower angle of the wound. The bandage is supported by three broad strips of adhesive plaster applied horizontally so that the thoracic wall which has been mobilized by the operation will not give way too much to the shock of coughing during the first few days after the operation. To collapse the apex it is sometimes necessary to transplant pads of fat into the extrapleural space.

The operation is safer if it is performed in two stages. As a rule from two to three weeks should elapse between stages. Bull has performed most of his operations under local anesthesia but is now using general anesthesia more frequently and has found it entirely satisfactory.

Following the operation the patient complains for a few days of dyspnea, expectoration and pain in the chest and upper arm. In the after treatment the compression bandage is of value and narcotics should be given. The pulse usually remains rapid and the temperature high for four or five days. The large wound usually heals by first intent on and the patient is up at the end of ten or twelve weeks.

The sputum diminishes rapidly. Tubercle bacilli are greatly decreased in number and very often disappear entirely before the patient leaves the hospital.

The side of the thorax operated upon falls in considerably a scoliosis of the spine develops with its convexity toward the diseased side and the mobility of the arm is impaired for a time because of pain but complete function returns unless the scapula is fixed. The permanent inconvenience caused by the operation is slight.

After the operation the patient should be sent back to the sanatorium for at least three months and if possible for six months. Improvement is evidenced by a decrease in the amount of sputum, a fall in the temperature to normal, an increase in the appetite and weight and improvement in the mental condition as well as by the disappearance of the tubercle bacilli. As the lung operated upon is never again normal the patient should never return to hard physical exercise.

In some cases a rise in the temperature is observed as early as the day after operation. The most probable causes are (1) infection of the wound, (2) pyæmia from the lung cavity, (3) acute infection in the healthy or diseased lung, (4) spread of the tuberculosis in the lungs or other organs, (5) parenchymatous degeneration of the liver or kidneys as the result of narcosis, and (6) increased resorption of toxins.

CLAYTON F. ANDREWS, M.D.

Santy P. and Guilleminet M. Extrapleural Thoracoplasty and Dilatation of the Bronchi (Le thoracoplastie et la dilatation des bronches). *Ly. ch.* 94, 17, 167.

On the basis of two cases of severe bronchiectasis treated by extrapleural thoracoplasty (thoracotomy) the authors draw attention to the advantages of this operation in the surgical treatment of bronchiectasis provided there is very wide removal of the thoracic wall even when the lesions are circumscribed.

Extrapleural thoracoplasty or thoracotomy consists in resection of the ribs in their paravertebral segment. The ribs are exposed by a long incision brought to a point three fingerbreadths from the spinous processes and extending to the superior border of the trapezius parallel with the eleventh rib. The ribs are carefully denuded and resected with care to spare the vessels and intercostal nerves. The total amount of bone removed amounts to 120 cm. or more.

When the bronchial dilatations are apparently limited to the high or low parts of the lung the thoracoplasty includes the seven or eight superior or inferior ribs but when the lesions are diffuse it may include the first eleven ribs.

Regional anesthesia is employed. The operation should be preceded by thorough preparation of the patient by vaccination, cardiac stimulation, etc.

The authors believe that thoracoplasty is indicated in bronchiectasis for the following reasons:

1. The condition is a chronic open suppuration



The intensity of the pruritus is low, which is characteristic of bronchiectasis, especially in the adult, and is only a therapeutic measure with a constant action, hence the superiority of the flag over the rest of the preparations.

3. If pulmonary edema is present, the patient is placed in a semi-Fowler's position. The patient is encouraged to cough and expectorate. The patient is reassured that the edema is a common complication of heart failure and that it will be treated with diuretics.

4. Extrajudicially it is a party to a genuine  
contract which is subject to the jurisdiction of the  
court.

In 1930, the United States had a population of 122,000,000. The actual population in 1930 was 122,000,000. The actual population in 1930 was 122,000,000. The actual population in 1930 was 122,000,000.

You, with my constant love, a  
station and my constant fall, general  
conflict, I usually in his way of life  
among the rays of light, but he is  
meritorious, the first ray of light, I am  
the first ray of light, I am

With regard to other methods of determining the authors state that the following connects his ball rather unfavorably to the author. A letter from the author is dated 1914, in which he states that the owner of the ball is a person named J. C. Miller, who is a resident of the city of New York.

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## HEART AND PERICARDIUM

Marvin H. M. and Harvey S. Co. The Surgical  
Treatment of Adherent Pleurisy  
H. J. (1914) 1: 1-5

Although the value of cardiolysin determined by Brauer twenty years ago in his review of the literature revealed the respiratory

[illegible][illegible]

kce v r w a e i l a n u e t i f a l a p l t h e  
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 j m l n M D

Good H J S and Rogers J Some Ecological Problems of Cardiology The Techniq of Medical

Some people feel that case fatalities are due to obstruction of the windpipe from the left lung and that the stroke occurs there. It is essentially local and fatal even in an animal that can be cured of the cancer and a good inter-  
est in the disease is that it is the operative

[illegible]

Pass the pericardium through an osteoplast  
of the line of the between the yugular phrenic  
nerves just below the superior intercostal vein.  
The yugular vein will emerge from the axilla through  
the axillary vein wall into the thoracic cavity and the  
contracted vein will join the septum and ligament  
toward the axillary vein. The vein is sutured  
placed about the penicillin drug tight as the knife  
is withdrawn. (Fig. 1, 2, 3, 4, 5, 6)



carcino- n. l. f. m. s. i. k. bar. tul. reult. is. make this mistake uncommon. Mo. ever in such cases it is rare that the physical gns. clinical history and roentgen finding agree.

The differentiation between benign and malignant neoplasms may sometimes be made at the clinical progress and in the degree of growth of the tumor. It is revealed by repeated roentgen examinations of its position from different angles. Rapid growth in the chest wall or in the projections radiating from the tumor is multiple nodules, evidence of metastases to the ribs or to the lungs and pleural effusion indicate malignant neoplasms. Lack of growth and maintenance of a sharp, definite border are signs suggesting absence of malignant neoplasms. From the ribs or the ribs the pressure of a benign tumor is sharply limited to the contour of the tumor shadow itself.

The point of origin of the tumor may be indicated by the location and distribution of the metastases. Metastases of the posterior mediastinum extend to the hilum, rarely and comparatively clear lung fields suggest a mediastinal origin, especially if the lateral borders are smooth and well-cut. Unilateral hilar involvement is characteristic of mediastinal density is suggestive of primary bronchial carcinoma.

The differential diagnosis of metastatic processes is usually not difficult. The roentgen ray findings are frequently pathognomonic as in cases of osteolytic sarcoma or are suggestive because of the distribution through the lung. Even in cases that imitate primary carcinoma the history or accompanying general primary lesions usually make differential diagnosis possible.

Steroscopic views are of the greatest value in the diagnosis of metastatic disease of the primary tumor. In diffuse carcinoma of the upper lobe which is the most frequent involved the rib border of the density is sharply outlined and the upper border is well-out into the apex. This is usually characteristic of the primary tumor. Some cases of hilar carcinoma extend along the bronchial branches but thinning out sometimes abruptly in the hilum. Other cases show a metastatic shadow in the hilum.

For metastasis should be considered in all cases in which there is a plural lesion. In the case of the tumor immediately by roentgenography especially if the lung is sanguineous. The return of the shadow in malignant cases is usually rapid within twenty-four hours the quantity may be the same as before. The shadow is very suggestive of malignancy. The withdrawal of the shadow is usually of the same order as the rules previously mentioned. When the appearance is to be a large amount of fluid in the chest without displacement of the heart to the opposite side the possibility of lung tumor must be considered.

Small circular nodule of moderate density larger than ordinary tubercle and surrounding the clear lung suggest malignancy especially if few of them are found along the same bronchus and the density of the shadow increases as would be the case in peripheral bronchial lymphatic infiltration.

Hodgkins disease and lymphosarcoma may simulate hilar carcinoma very closely. The blood picture involvement of the superficial lymph nodes and the reaction to roentgen radiation will help to establish the diagnosis. The authors have seen very marked hilar density with infiltration along the large bronchi that appeared clinically to be due to lymphoma.

Lung tumors are rarely diagnosed clinically. The best means of arriving at a correct diagnosis of primary intrathoracic neoplasms is the combination of a well-taken history, a thorough physical examination, the histological laboratory tests and a careful roentgen examination. (J. N. L. Dils M.D.)

#### Heuser C. J. Intrathoracic Tumors. (S. J. 1941) 15: 670

If we refer to a series of light cases of intrathoracic tumor which were of unusual interest from the strictly pathological as well as that of diagnosis and treatment. The pathological classification in the light of the cystic sarcoma of the ribs and thymoma—the first case of xanthoma of the bronchus reported—and an aneurysm. In one case there is a difference of opinion as to whether the tumor was a hemangioma or a chondrosarcoma. In three cases of carcinoma the histopathologic diagnosis was indolent. The outstanding symptom in all cases was pain. Cough was a definite sign in three, in one of these there was purulent sputum and in another an attack of hemoptysis.

In the case of the cystic sarcoma of the pleural effusion was made and an exploratory aspiration attempt. As the needle met resistance an exploratory operation was performed.

In the second case of the tumor of the rib of stony hardness the correct diagnosis of the tumor.

In the third case the chief symptom was low abdominal pain and lumbar. The patient had been subjected to pendectomy but as not relieved. The rib bone was small but a finite tumor near the rib shaft was a large gain in the rib cage.

In the fourth case the patient had been kept for a prolonged ulceration because tuberculosis was suspected on account of hemoptysis. The tumor was in the upper part of the thorax and the X-ray plate produced a very dense and high carcinoma. The diagnosis of the tumor was made by the microscopic examination of the growth to be a fibrosarcoma.

In the fifth case a diagnosis of intrathoracic tumor was made on the basis of a very ill-defined hilar shadow. The upper part of the thorax. The patient had had a very wide and deep treatment during a period of five years without relief. Operation showed a tumor of the ribs and the aneurysm.

In the sixth case there was a palpable tumor at the level of the sixth rib. At first it was believed to be a sarcoma but on pathologic examination it was a lobularoma.

In the seventh case there was a tumor attached to the ninth and tenth ribs. The positive diagnosis was made before operation from aspirated fluid which showed tumor cells.

In the eighth case which had been studied by a number of observers a diagnosis of intrathoracic tumor had been made largely on the basis of negative Wassermann tests, failure to obtain a response from antisyphilis treatment and absence of pulsations observable under the fluoroscope.

Two other cases in this series both with expandible pulsations were diagnosed wrongly as cases of aneurism.

The operations were performed under ether anesthesia without differential pressure in six cases under nitrous oxide-oxygen anesthesia with differen-

tial pressure in one case and under intratracheal insufflation anesthesia in one case. The cyanosis and tachycardia which were noted in one case were relieved by pulling the lung outward into the wound.

Six of the eight patients recovered from the operation. Two died soon afterward, one with symptoms of pulmonary embolism and one from rupture of an aneurism. Of the six patients who recovered, two were living and well five or more years after the operation, two were living and well ten years after the operation, one died four months after the operation being unimproved by a decompressive thoracotomy, and one died ten months after the operation from recurrence of the disease.

CARL A. HEDGECOCK, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Pettit J A. Fascia Plication in the Repair of Inguinal Hernia. *Surg Gynecol Obst* 94 11 677

In brief Pettit's technique is as follows:

A curved incision in the skin is made as high above Poupart's ligament as possible with its convexity upward. The fibers of the external oblique are split from the internal ring upward as high as possible in order to obtain a long inferior flap for plication over the superior flap. The hernial sac is dissected high up and after ligation the stump is anchored with a suture at a point higher than the internal ring. After the internal muscles and the conjoint tendon have been sutured the border of the upper flap is sutured low down on Poupart's ligament beneath the lower flap. The spermatic cord is then transplanted to a new bed. A running suture of medium heavy double chromic catgut is used. The skin incision is covered with gauze and sealed with collodion. JOSEPH W. NEWMAN, M.D.

## GASTRO INTESTINAL TRACT

Struthers J E. Multiple Polypoid of the Gastro Intestinal Tract. *Surg Gynecol Obst* 94 11 610

Multiple polyposis of the gastro intestinal tract is not as uncommon as was formerly believed. Recently the number of correctly diagnosed cases has been augmented by the roentgen ray. Twenty four cases have been observed at the Mayo Clinic since February 1920. Twenty of these are reported.

The disease is serious from the standpoint of morbidity as well as mortality. The cause is not known but chronic ulcerative colitis appears to be an important factor. The author describes the gross and microscopic findings in detail. In a large percentage of the cases the disease terminates in malignancy. In the series of twenty cases eleven specimens were removed and of the latter five (45 per cent) were malignant.

In a consideration of these cases the practical problems are confronted. The advantage of a positive diagnosis and the danger of aggravating malignancy by trauma. The former decidedly outweighs the latter as the growths are superficial and easily approached. A diagnosis of malignancy in a localized area which is made early should certainly give a more favorable prognosis than the same report in a more advanced stage of the disease.

The symptoms vary with the size, position and number of the polyps. Generally patients with polyps localized in the rectum and sigmoid have a sense of weight, a loaded feeling in the rectum and

occasional tenesmus with or without bleeding. If the polyps are pedicled and low they may protrude from the rectum. If they are present in very large numbers prolapse of the rectum may occur. Diarrhea is practically always present and if there is extensive involvement of the colon is usually associated with pus and blood. Most marked involvement of the colon is found in the cases which begin with a mild diarrhea and later become chronic. The small intestines are rarely involved.

Involvement of the colon first causes a sense of fullness and later a vague abdominal pain which may be localized at the site of involvement. Complete or partial obstruction of the bowel results in stasis and the formation of toxins which have an inhibitory action on the proximal section and cause distention. If this is progressive symptoms other than those at the original site of involvement may mask the condition.

Proctoscopic examination should be made routinely in all cases of dysentery or more than a few days duration. Examination with the roentgen ray is practically the only means of diagnosing multiple polyposis of the stomach or above the reach of the proctoscope in the bowel.

There is no specific medical treatment. Undoubtedly operation offers the best results in all cases. If polyps are localized in the rectum cauterization or excision may be done. The patient should be kept under observation and if any signs of malignancy develop resection of the rectum should be performed. When the growths are located elsewhere in the gastro intestinal tract either of two procedures may be employed: 1. resection—colostomy or intestinal resection. Colostomy carries with it very little danger but is not always certain in its result. Intestinal resection is associated with grave danger. The grade and extent of the involvement must be determined as accurately as possible.

Bell J R. and MacAdam W. The Variations in Gastric Secretion of the Normal Individual. *Am J Physiol* 194 1 115

Bell and MacAdam by means of the fractional method made a study of the gastric response of a healthy person to the same test meal under the same conditions on twenty consecutive days. The lower acid curve was obtained at the first examination. Subsequently with one exception the curves of free hydrochloric acid and total acidity were of a characteristic type and the degree of acidity varied between a mild and a definite hypochlorhydria.

The rate at which the stomach was emptied which was remarkably constant throughout the entire investigation was confirmed by roentgen ray examination.

The standard deviation and the coefficient of variation of the acidities of the different specimens at corresponding times were determined. The coefficient of variation for both free hydrochloric acid and total acidity was lower in the one hour specimens. That is the acid values of this fraction varied within the narrowest range.

The findings following the use of oatmeal gruel were compared also with those following several of the other test meal commonly employed. The tea and toast meal provoked a slightly greater acid secretion than the average obtained with oatmeal gruel.

If a low or normal acid curve is obtained on the first examination and the clinical history suggests hyperchlorhydria, the test should be repeated before a high degree of acidity can be eliminated.

MORRIS H. KAMM, M.D.

Cochrane, G. Congenital Hypertrophic Pyloric Stenosis in Infants. *Clin. & Ch. J.* 31, 9, 1924.

The author reports on a series of forty-seven cases treated since 1914. In thirty-three in which operation was performed there were twelve deaths. In fourteen medically treated there were two deaths.

Of the forty-seven patients forty-two were boys and five were girls. The ages ranged from 5 weeks to 4 months. Twenty-three of the infants were artificially fed. The duration of the symptoms ranged from one to seven weeks. The infants operated upon had lost at least 20 per cent of their body weight.

The diagnosis was based on a history of mechanical obstruction, constipation, mucous stools, rapid loss of weight, visible active peristalsis from left to right and occasionally a palpable tumor. A fluoroscopic examination was made to distinguish between pylorospasm and stenosis in obscure cases only. The author does not agree with Haas that both are the same.

The treatment should be medical as long as the condition progresses well and as long as not more than 20 per cent of the body weight is lost. Most of the cases reviewed were not seen until late.

The Fredet-Rammstedt operation was done through a right rectus incision and the abdominal wound closed in layers with silkworm retention sutures.

In the postoperative care, glucose or salt solution as given by the drip method or under the skin. Feeding was begun one hour after the operation—a teaspoonful of warm water alternated with diluted breast milk every two hours. The amount was increased gradually to full feeding on the fifth day.

The lives of a greater number of infants with congenital hypertrophic pyloric stenosis would be saved if all babies with projectile vomiting, constipation, visible peristalsis, rapid loss of weight and other usual signs of obstruction were more carefully watched.

The author draws the following conclusions:

1. Ether anesthesia is preferable to local

2. The Fredet-Rammstedt operation is much simpler and more quickly performed than gastroenterostomy and therefore preferable to the latter.

3. In most cases the differentiation between pylorospasm and stenosis is clear. Fluoroscopic examination should be resorted to only in doubtful cases as the patient is too ill to be loaded up with barium unless this is absolutely necessary.

4. Patients under observation should not be allowed to lose too much weight before resort is had to surgery. After the loss of 20 per cent of the body weight they become poor operative risks. The high mortality is due to the fact that many of these cases are seen too late to avoid operation.

ROBERT M. GRIFF, M.D.

Dragstedt, L. R. and Vaughan, A. M. Gastric Ulcer Studies. *Clin. Surg.* 9, 24, 11, 1921.

The authors studied the effect of exposing various tissues to the action of the gastric juice in experiments upon living dogs. The mucosa of the lower duodenum, upper jejunum, ileum and colon was exposed. At the end of twelve months the mucosa was still intact and on microscopic and macroscopic examination appeared entirely normal. The intestinal serosa and muscular layers were less resistant.

In other experiments spleens with unimpaired blood supply and with or without their capsules were exposed to the action of the stomach juice by implanting them in the stomach wall. There was no digestion of the splenic tissues. The old theory that a mucous covering is necessary to protect a living cell from the action of the gastric juice was proved erroneous as at necropsy no mucosa was found over the spleens.

In a third series of experiments kidneys with intact blood supply and with or without their capsules were implanted in the wall of the stomach. There was no digestion of the exposed tissues.

In a fourth series of experiments the hind legs of living frogs were exposed to the gastric juice of dogs. Test tubes containing the juice were loosely fitted about the legs by means of rubber dams placed over the top of the tubes and perforated. In each case one hind leg was ligated to occlude its blood supply completely. The ligated and unligated legs were both digested but in the unligated leg the digestion was much slower.

In a fifth series of experiments the legs of living frogs were exposed to the gastric juice of frogs. At the end of two hours the skin had been completely digested and at the end of four hours there was considerable destruction of the muscle and connective tissue.

In a sixth series of experiments gastric ulcers were produced in dogs by injecting under the gastric mucosa a solution of a 1 per cent nitrate of silver and then placing from twenty to thirty sutures of heavy linen thread in this area. Of six dogs treated in this manner four showed unhealed lesions three and four months later. The administration of alkalis materially hastened the healing of the ulcers. This

was due not only to neutralization of the gastric juice but also to partial immobilization of the ptyloes caused by the alkalies

Experiments performed to determine the relation between ulcers and hyperacidity showed that in dogs an experimental ulcer may increase the secretion of gastric juice during the digestion of a meal. When the acidity of the juice is low, the production of the lesion may increase it. A true hyperacidity in the sense of a gastric secretion with a higher concentration of hydrochloric acid than is found in normal pure gastric juice is as never observed.

JOHN L. BASS, M.D.

Hurst A. F. The Treatment of Severe Gastric and Duodenal Hemorrhage. *Lancet* 1914, 1, 1095.

Hurst believes that hemorrhage from gastric and duodenal ulcers is far less frequently fatal than is generally supposed. In cases of hematemesis he has never known of a case in a surgeon to save the patient's life. A review of the autopsy records of the Guy's Hospital, London, for the period from 1911 to 1914 inclusive revealed only twenty-three deaths directly attributable to hemorrhage from a gastric or duodenal ulcer, excluding cases of cirrhosis of the liver. Since about 600 cases of gastric hemorrhage were admitted during this period, the mortality from severe hemorrhage was about 3.5 per cent.

Of chief importance in the medical treatment of hemorrhage is complete rest in bed. This keeps the blood pressure down and prevents the dislodgment of the newly formed clot. The stomach must be empty and contractions repeated hypodermic injections of morphine keep the patient sleepy and overcome his apprehension. Morphine inhibits the gastric secretion. Neither food nor drink should be given by mouth. Rectal feedings with dextrose solution and the administration of saline solution by hypodermoclysis are essential.

The author keeps the stomach empty by passing a stomach tube just beyond the cardiac orifice and washing repeatedly with about 4 oz. of ice cold water until the washings return clear. A 1:100 ferric chloride solution may be used instead. Finally 1 cc. of a 1:100 adrenalin chloride solution is poured into the stomach. The latter measure is especially effective in gastrostasis in which the oozing comes from multiple small erosions of the gastric mucosa. Adrenalin given by this method is not absorbed and the efferent cannot raise the blood pressure.

Since the danger of recurrence of the bleeding depends upon the digestion of the blood clot over the ulcer site, Hurst favors the administration of magnesium oxide to neutralize the acid secretion. The patient's blood should be grouped and if the hemoglobin falls below 30 a blood transfusion should be given immediately. For the surgeon's prognosis is probably in accord with the surgeon's who believe that the danger of succumbing to hemorrhage is less than the danger of operation during hemorrhage. The chief indication for opera-

tion in the acute stage is the occurrence of severe persistent bleeding in an elderly person with arteriosclerosis.

The author cites statistics to prove that the liability to bleed is just as great after an operation for gastric or duodenal ulcer as after medical treatment, whether the patient had hemorrhage previously or not. The only definite indications for surgery are hemorrhagic contraction and pyloric obstruction in either of which will occur if all foci of infection are eradicated and medical treatment is carried out long enough.

J. H. W. NELSON, M.D.

May C. H. C. Gastroduodenostomy Its Indications. *Am. J. Surg.* 1914, 2, 583.

Within the last few years it has become generally recognized that not infrequently ulcers cause few or no symptoms. Cases with mild symptoms of bleeding may not be recognized as cases of ulcer any more readily than those in which there is no bleeding but the cases with severe hemorrhage are recognized at once as probably cases of ulcer. Many ulcers heal under conservative treatment but others may not heal even after gastroenterostomy. The hippocratic treatment has given relief or a cure in a sufficient number of cases to warrant its trial in selected cases. Large gastric ulcers may develop into cancer but duodenal ulcers apparently do not.

The various procedures developed for the surgical relief of gastric and duodenal ulcers present variations of technique on fundamental principles. The method of operation chosen should be suited to the particular case. The author discusses the Billroth I and II operations and the variations in technique introduced by Kocher, Heineke, Mikulicz, Fitz, Loretta, Hahn, and a Billroth II modifier. If the outlet of the new pylorus formed in the Billroth I procedure is small, slight dilation of the anterior wall of the duodenum will enlarge its perimetrium for suture to the stomach. The danger of leakage following gastric resection is greatly reduced by the W. J. Mayo procedure of drawing a fold of the omentum through the opening in the gastroduodenal membrane behind the stomach to reach and cover the suture line of the lesser curvature. A cell is the posterior or gastroduodenal incision and to prevent adhesions and fixation of the stomach to the pancreas. The anterior suture line is covered in the same manner by a strong fold of omentum.

The author prefers a large flap gastroduodenostomy to the narrow one of Finney. His procedure is so adapted that it excises anterior pyloric lesions, relieves low gastric or duodenal lesions. The closure is made by suturing from above downward beginning at the duodenum, the pyloric muscle and returning to the duodenum to the stomach. The closure is continued outside the flap by a full layer suture with the pyloric opening being greatly enlarged and lined. The operation is not half a century old. The author is not completely satisfied with the use of small bowel anastomosis to them. It cannot be followed by gastroduodenal ulcer or gastro-

jejuno-colic ulcer with fistula such as may follow posterior gastro-enterostomy. It does not lower the gastric acids to the same degree as does gastro-enterostomy. The risk is equal and both procedures are often equally possible. However gastrojejunal ulcers are more common in cases in which high acids empty into the jejunum which is not fitted to receive them.

Gastro-enterostomy does not always cure ulcers but even with its indiscriminate general application it has been found an eminently successful procedure. When it is properly performed in cases of proved ulcer or obstruction due to ulcer all results occur in only a small percentage. Gastrojejunal ulcer develops in not more than 2 per cent. The effort to advance the adoption of upper duodenal and partial gastric resection by attributing to gastro-enterostomy a high percentage of failures frequent secondaries and a high mortality was a great mistake. Gastro-enterostomy has established its record.

**Lec n. The End Results of the Treatment of Perforated Gastric and Duodenal Ulcers**  
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On the basis of nine cases Lec n. draws the following conclusions:

1. There is no essential difference between the end results of operations for perforated ulcers and those of operations for non perforated ulcers.

2. The addition of gastro-enterostomy to the suturing of a perforated gastric or duodenal ulcer appears to assure better and more lasting recovery. In cases of perforated just pyloric ulcer a gastro-enterostomy is indicated as a supplementary measure when ever the patient's condition will allow it.

3. Pylorogastrostomy resection for perforated ulcer does not always prevent serious complications. In certain cases this procedure may be less radical than it appears.

4. Inoperatively cured cases of perforated gastric or duodenal ulcer recur because of the ulcer or a gastrojejunal ulcer may develop after several years of apparently good health.

5. With regard to cases of gastric and duodenal ulcer it is advisable to use the words recovery and radical operation with discretion and in a restricted sense as late recurrences are possible. To date the surgery of gastric and duodenal ulcer has been a symptomatic surgery since it is incapable of reaching the cause of the disease which is still unknown.

W A DEX VAS

**Balfour D G. Factors of Safety in Gastric Surgery**  
M t M d 9 4 1 33

Because of the importance of maintaining the operative mortality rate as low as possible it is essential that surgery become familiar with the chief factors contributing to safety in gastric surgery. The first consideration is the advisability of operation. Chronic gastric ulcer usually indicates immedi-

ate operation because the operative risk is insignificant when it is compared to the danger of permanent disability. Postponement of operation may be warranted to allow the patient's condition to improve. As duodenal ulcer a less serious contraindication to operation are more numerous and medical management may be advisable although the low risk and excellent results of operation leave no justification for non-surgical measures ineffectively prolonged. In carcinoma of the stomach however much greater risks may be accepted since the only hope of cure is given by operation. The problem of the advisability of exploration has been greatly simplified by roentgenological examination.

In cases of peptic ulcer pre-operative preparation is usually not necessary but may be advisable if there are complications such as obstruction, anemia or hemorrhage.

The chief factors of safety are in the conduct of the operation. Probably the safest anesthetic is a local anesthetic combined if necessary with a small amount of a general anesthetic. Ethyl ne appears to represent an important advance in the field of anesthesia.

The first rule is that the operation should be completed as expeditiously as is consistent with careful work. It is essential also that the operation selected be that which is best suited to the lesion. The next important factor is proper performance of the operation. The fundamental principle is adequate drainage. Any anastomosis should be large, properly placed and protected against subsequent interference in its function. Also of great importance are the avoidance of tension and the control of hemorrhage.

In the postoperative care the attention is first directed toward the prevention of pulmonary complications. Rest for the stomach should be provided by giving fluids by rectum. If acute dilatation of the stomach is suspected the stomach tube should be promptly used. If oozing takes place into the stomach gastric lavage with water at 120 degrees F is the most efficacious measure and may be repeated as necessary. When obstruction at the anastomosis does not respond to large prompt entero-anastomosis should be performed. The most successful control of any complication depends of course upon its early recognition and treatment.

**Poynton F J. Acetonæmia and Volvulus of the Small Intestine in Childhood**  
La cel 1924  
cc 7 1045

This article is based on a series of five cases in young children. The signs of the condition were recurrent attacks of vomiting and abdominal pain, constipation, an acetone odor to the breath and the presence of large quantities of acetone and diacetic acid in the urine. The physical findings were generally negative. There was no palpable tender mass and no abdominal distention to suggest a surgical lesion. In every case the condition was fatal. At autopsy an obstruction high up in the



small bowel was found. The greater part on of the small intestine was gangrenous. The mesentery was unusually long and was twisted on itself clockwise.

It is pointed out that acetonaemia in childhood is a symptom. The diagnosis may be difficult especially when there is a history of recurrent attacks of nausea vomiting and constipation. Acetonaemia may occur as a fleeting and trivial symptom or as a symptom of evidently grave importance needing surgical intervention. *John W. Nixson M.D.*

Owen A. W. Remarks on the Diagnosis and Treatment of Chronic Intussusception. *B. J. M. J.* 1924 i 904

Chronic intussusception is a disease of adults being rare in children. It may be present for weeks without producing obstruction or bloody stools.

On palpation a sausage shaped tumor and an unnatural emptiness in the right iliac fossa may be felt. In still cases the tumor was palpable more distinctly when the patient was asleep. The X-rays did not help in the diagnosis. The condition has been mistaken for appendicitis and tuberculosis. Still described a typical case in a child as follows:

The patient was seized suddenly with pain in the abdomen and vomited on one or twice. During the next few days he had several other attacks of vomiting associated with colicky pain. These attacks then became less frequent occurring only once in two or three days. Bowel movement which had occurred daily before the onset of the condition became less regular but patients had a good effect and the stools were normal containing no blood or at most only a streak once or twice such as might be seen in the stools of any constipated child. The symptom that troubled the child's parents most was the wasting. The temperature remained normal.

Reduction of an intussusception is usually not very difficult. After the reduction a few Lembert sutures are necessary to close over the peritoneal tears on the wall of the intestine due to the separation of adhesions. If the intussusception is irreducible or gangrenous short circuiting removal of the intussusception through the encasing layer or resection with end to end anastomosis should be attempted. Resection has a high mortality. Usually the mesentery is abnormally long and the caecum and ascending colon are unduly mobile. Sometimes plication of the mesentery or fixation of the caecum may overcome the tendency toward intussusception but except in recurrent cases is seldom necessary. *Philip J. Murphy M.D.*

McKetty J. Chronic Duodenal Stenosis. *S. G. J. G. & Ob.* 1924 xx 144

The type of duodenal stasis discussed is that resulting from compression of the duodenum between the root of the mesentery (with its contained mesenteric artery) and the aorta.

The findings at operation are the following:

1 Dilatation of the duodenum throughout its entire length

2 Narrowing of the angle between the superior mesenteric artery and the aorta sufficient to obliterate the lumen of the bowel at this point

3 The passage of the gas into the previously collapsed jejunum when the root of the mesentery is raised

4 Thickening of the wall of the duodenum

Compression of the duodenum by the root of the mesentery is probably the result of the erect posture of man since it does not occur in animals. Other factors in the etiology are the habitus and visceropexy but of greater importance is the loose caecum with a long parietocolic fold which exerts traction on the mesentery of the small bowel.

The symptoms suggest dyspepsia and disease of the gall bladder and appendix. The feeling of gas and distention is relieved by the assumption of the lateral prone position. The roentgen ray examination will definitely reveal the presence or absence of duodenal stasis. Non-operative measures consist in the wearing of an abdominal belt and postural treatment.

The operative treatment consists in duodenal jejunostomy or in less severe cases suspension of the caecum ascending colon and hepatic flexure. In a duodenojejunostomy the duodenum is exposed through the transverse mesocolon between the right colic and the ileocolic arteries and the anastomosis is made in the usual manner.

Since 1914 the author has performed duodenal jejunostomy in thirteen cases. There was one operative death. The appendix was removed in eleven cases and the gall bladder in two. Nine patients were cured and two were greatly benefited. In one case the result was unsatisfactory. *W. R. G. Bux M.D.*

Diamond J. S. New Phase in the Roentgen Interpretation of Duodenal Ulcer. *Am. J. R. & G.* 1924 x 3

The indirect method of roentgen examination based on hypermotility hyperperistalsis hypersecretion etc. has no conclusive value in the diagnosis of duodenal ulcers particularly in the early stages. Changes in the configuration of the duodenum are of conclusive value. These are best studied in serial roentgenograms.

The anatomical factors which exert an influence upon the configuration of the duodenum in ulcer are:

1 A localized thickening and reinforcement of the muscular tube along the lesser curvature border of the cap. This simulates the tenic coli and may be called tenic bulbi duodeni.

The suspensory effect of the duodenohepatic ligament.

3 The formation by (1) and (2) of a supporting structure or fulcrum on the lesser curvature border of the duodenum.

As a result of these factors ulceration causes displacement of the adjoining structures so that the ulcer overrides the lesser curvature and the localized

contraction narrows the lumen in the segment bearing the ulcer.

The roentgen deformities in duodenal ulcer are (1) the niche commonly on the lesser curvature border (present in 66 per cent of the author's series) (2) the defect (3) retraction and (4) diverticula formations. The defect and retraction are spastic manifestations and may or may not be accompanied by the niche. They seldom represent the ulcer base. The administration of belladonna for forty eight hours and a milk diet usually relax the spasm and permit the realization of a niche. The diverticula are of the pulsion type and are proximal to the ulcer. They differ in size and shape during the examination and were found six times in the series of thirty cases.

The literature contains the reports of numerous cases in which an ulcer was present without any palpatory sign of ulcer at operation.

In the author's opinion a negative surgical diagnosis is not justified unless the duodenum is opened and inspected. CHARLES H. HIFACOCK, M.D.

Apperly F. L. Gastro Enterotomy Observation on Its Mechanism and on the Production of Pain in Duodenal Ulcer. *Med J* 4 1 1 1924 26

In a study of twenty seven postoperative cases thirteen of which had been studied before operation it was found that they fell into two groups viz those in which the free acidity was reduced and those in which the acidity was not reduced or was increased.

Apperly believes that the natural atony of acid which occurs normally in the duodenal cap results in the relief of pyloric spasm and therefore in the relief of pain. Gastro enterostomy in the presence of pyloric spasm results in the emptying of the stomach contents into the duodenum and a consequent backing up of the alkaline duodenal contents toward and into the duodenal cap with neutralization of the acid there and relief of the spasm and pain.

After gastro enterostomy an X ray examination made at one time may show all of the food passing by way of the stomach while an examination made at another time may show it passing entirely by way of the pylorus. Therefore non function of the stomach cannot be diagnosed by one X ray examination.

Exclusion of the duodenum has no effect upon postoperative acidity.

Bile was present in the fasting contents of the stomach before operation in 17 per cent of the cases and after gastro enterostomy in 54 per cent. All of the first meals contain bile.

A certain percentage of patients show high acidity after gastro enterostomy. High acidity with symptoms after operation suggests a faulty stomach. Operation gave a complete cure in 63 per cent of the cases presenting definite gastric or duodenal ulcer and caused improvement in 31 per cent. In 6 per cent it failed. DE WIS W. CARR, M.D.

Lundberg S. Cancer of the Duodenojejunal Flexure. *Acta Chir Scand* 1924 1 47

The author reports a carcinomatous structure in the duodenojejunal flexure of a man 61 years of age who had suffered from periodical attacks of vomiting for ten months. Factors of great importance in the diagnosis were the roentgen findings and the gall colored vomitus. At operation the duodenojejunal flexure was resected and the continuity of the intestine re established by end to side anastomosis. Histological examination showed the lesion to be an adenocarcinoma. Three months after the operation the patient was without symptoms.

Cuny J. An Unusual Mechanism for the Production of Internal Strangulation by Meckel's Diverticulum (Unmec n merare lei pr ductu et angustia internep r d articule Meckel). *Bull et Ann Soc Acad Pa* 1924 20 133

Six days before admission to the hospital an apparently healthy child 4 years of age had a sudden attack of vomiting and epigastric pain. The pain soon became general throughout the abdomen. The passage of feces and gas was arrested and repeated enemas given during a period of three days were ineffectual. The facies suggested peritonitis. The pulse was 140, the temperature 38 degrees C and the abdomen markedly distended and rigid.

An emergency operation revealed a little sero sanguinous fluid in the peritoneal cavity and a long loop of small intestine strangulated by a Meckel's diverticulum adherent at its tip to the cecum. The diverticulum was situated between 45 and 50 cm from the ileocecal valve its base was 3 cm in diameter. Its lumen was filled with ascariides lumbricoides. The strangulated loop was freed by division of the fibrous adhesion of the diverticulum. The intestines could be replaced only after they had been freed of feces and gas through an incision. The abdominal wall was closed up to the ileocecal region, the intestinal incision and the diverticulum which the author intended to remove at a second operation. The child died that night.

The author emphasizes the importance of the ascariides in the pathology. He assumes that at first the diverticulum contained only a few worms and that the intestinal loop engaged behind the ceco diverticular band became strangulated when the number of ascariides increased sufficiently to stretch the diverticulum and render it turgid.

Cackovics reported a case of volvulus which he attributed to violent movements of the intestine stimulated by ascariides in a Meckel diverticulum.

The local complications associated with the presence of ascariides are (1) mechanical obstruction by the worms and (2) an infectious process such as cholecystitis, appendicitis, diverticulitis, intestinal ulceration or perforation with general or localized peritonitis or abscess.

The complications due to Meckel's diverticulum are classified by Wienecke as (1) obstruction by adhesion of the diverticulum to form a band (2)

obstruction by a free diverticulum through the formation of a knot or the occurrence of volvulus and (3) pseudo-obstruction or paralytic obstruction from diverticular peritonitis

WALTER C. HURST M.D.

Brockman R St I The Problem of Drainage in Acute Appendicitis *B I J S* 5 19 4 1 690

The trend of opinion in recent years is toward the elimination of drainage in acute appendicitis as far as possible with safety

Focal fistulae secondary hemorrhage residual abscesses and the formation of intestinal fistulae causing obstruction are much more common and convalescence is less comfortable and more prolonged when drainage is established than when it is avoided

The resistance of the peritoneum to infection is explained by the absence of a rapidly acute tension causing tissue destruction. The greater resistance of the pelvic peritoneum as compared with that of the peritoneum in the upper part of the abdomen is due to the looseness of attachment of the former. In the upper abdomen the membrane is firmly bound down to the substance of the liver and diaphragm

The advisability of drainage depends upon the state of the peritoneum. The question to be decided in every case is whether the damage done has progressed so far that complete return to normal would be impossible after the removal of the primary cause of the inflammation

If closure is effected without drainage the peritoneum must be intact at the time the abdomen is closed and must remain intact after closure

The author divides cases of appendicitis into the following classes

Class A cases in which the condition is that of a frankly localized abscess with granulating walls which bleed freely as soon as the pus is evacuated. In such cases drainage is indicated whether the appendix is removed or not

Class B cases of ordinary acute appendicitis in which the appendix has not become gangrenous or perforated. Free fluid may be absent or if present is just becoming turbid. In a series of 300 such cases treated by appendectomy followed by primary closure there were no untoward results. Drainage is necessary only when the appendix is buried in a mass of old adhesions the removal of which denotes a large area of its peritoneum and causes oozing

Class C cases of gangrenous or perforative appendicitis with diffuse peritonitis. In such cases the peritonitis is often purulent. In the great majority closure can be effected without drainage but in a few especially those in which the cells of the peritoneum have obviously undergone a destructive change closure without drainage would change the potential abscess into an actual abscess. In the absence of definite signs discernible to the eye the following facts must be borne in mind

1 Cases in which the condition has been present longer than three days are more apt to require drainage than those dealt with earlier

2 A child of 12 years or under with a gangrenous appendix and purulent fluid in the pelvis will not stand closure as well as an adult with the same condition

3 The degree of toxemia can be judged with considerable accuracy from the patient's general appearance and facial expression. The presence of cyanosis without dyspnea is a sign of advanced toxemia. It usually foretells a fatal ending and is a clear danger signal against closure without drainage

It is believed by many surgeons that an exudate with a purulent appearance is pus which demands drainage. The author states however that drainage of a pus containing cavity is necessitated not by the contained fluid but by the condition of the walls of the cavity. This is true in the case of the peritoneal cavity. Wilkie holds that an immediate examination of the fluid will give the necessary information. He claims that the absence of large mononuclear cells their failing power of absorbing stains and absence of phagocytosis are evidences that drainage is required. The surgeon can usually rely upon the gross characteristics of the exudate. The greater the amount of fluid found the safer it is to close without drainage provided the exudate however purulent it may be is homogeneous in appearance. Drainage is required in cases of gangrenous appendix with dry peritonitis of the diffuse variety in those with a blood stained purulent exudate in those with a large number of definite flakes of coagulated lymph and in those with an exudate which has been described as resembling beef tea. Apart from these conditions the presence of a purulent peritonitis does not of itself demand drainage

The degree of gangrene or perforation of the appendix matters little in the question as to the advisability of drainage provided the organ lies free in the peritoneal cavity. If it is bound down by adhesions or is extraperitoneal its removal leaves a raw infected surface of connective tissue which demands local drainage. Any signs of extensive thrombosis or threatened gangrene of the caecum or intestines or a marked edema of these parts give warning that closure may cause serious trouble

Drainage is of three types (1) local drainage (2) pelvic drainage (3) safety valve drainage. In all instances the material used is rubber tubing

Local drainage. Local drainage is called for when the invagination of the appendix stump is insecure when the formation of a local fistula is feared when there is local ooze and when there is an abscess cavity shut off from the general peritoneum

Pelvic drainage. There are very strong factors against the use of pelvic drainage. This is because it comes shut off from the peritoneal cavity in a few hours and the only indication for the use of drainage in the pouch of Douglas is the presence of an abscess cavity in that region at the time of operation

**Safely valve drainage** Safety valve drainage can be provided by passing a tube just through the incision in the parietal peritoneum. The spaces in the abdominal wall should be drained to prevent diffuse cellulitis of the walls—a tube to the peritoneum, a tube under the external oblique aponeurosis and a silk worm gut tube above the aponeurosis.

The question of drainage can be definitely settled only by a true understanding of resistance to infection. If a patient possesses strong resistance it is immaterial whether drainage is established or not. If he lacks this power trouble is to be expected whether drainage is established or the abdomen is closed primarily. HOWARD A. MCKNIGHT MD

**Rockey A. E. Transverse Incision and Dependent Drainage in Appendicitis.** *Am. Surg.* 9:41, 1914

In operations for appendicitis the author has used a transverse incision for eighteen years. This extends from over the belly of the right rectus directly across McBurney's point to a point just above the iliac spine. The rectus sheath is cut and the aponeuroses of the external and internal oblique and the transversalis are incised transversely. The incision is spread open by up and down traction, a large area of peritoneum being thereby exposed. Exposure is facilitated by retractors in both ends of the incision. The appendix can be readily delivered without contamination of intestines.

When the appendix occupies the pelvic position a vertical mid rectus incision is better. The transverse incision is especially applicable to suppurative cases because it facilitates dependent drainage. The latter is favored also by placing the patient on the right side with the trunk slightly raised. The drainage material brought out through the outer angle of the incision and the wound closed by sutures in the sheath of the rectus, the aponeuroses and the muscles. *Am. Surg.* 10:1, 1915

## LIVER GALL BLADDER PANCREAS AND SPLEEN

**Mann F. C. A Consideration of Some of the Functions of the Liver.** *Surg. Clin. N. Am.* 9:434, 1914

The function of the liver is discussed with regard to three general considerations: the relation of the liver to carbohydrate metabolism, to protein metabolism and to the formation of bile pigment. The conclusions given were drawn from the results of a large series of experiments on the effect of total removal of the liver from dogs. It is emphasized that the liver was completely removed and the resultant experiments were not complicated by portal obstruction, anesthesia or other of jectious influences.

After the liver is removed from dogs, the animal recovers from the anesthetic and for a few hours usually from the effect of the anesthetic. During this time it will walk around, respond to call, wag

its tail and seem no different from animals subjected to other operative procedures. After a variable period it develops a very constant characteristic group of symptoms. These in the order of their occurrence are muscular weakness, loss of reflexes, muscular twitchings and convulsions. The time elapsing between the first symptom and death is seldom more than an hour or two. The symptoms mentioned were found to correspond closely to the decrease in the sugar in the blood. They can be prevented and the animal maintained in a normal active state for twenty-four hours by the administration of glucose or substances which are converted into glucose in the blood of the dog. Many other substances have been used, but glucose is the only substance with this action. It has this effect whether given orally by jejunostomy or intravenously.

After hepatectomy the glycogen content of the muscles decreases, showing that this source of glucose is being drawn upon. It is also noted also that the transitory hyperglycemia, those following an asphyxia, the administration of certain drugs such as adrenalin, did not occur if the liver was removed. In the hyperglycemia following pancreatectomy the blood sugar is immediately decreased after hepatectomy. The liver undoubtedly is primarily concerned in the regulation of the normal level of the blood sugar.

Protein metabolism is markedly affected by removal of the liver. Amino acid excretion in the urine and the amount of amino acid nitrogen in the blood are increased. Creatinine, creatine, metabolism is not affected. Uric acid accumulates in the blood and large amounts are excreted in the urine. Urea formation depends entirely on the presence of the liver. Following removal of the liver the decrease in the urea content of the blood is the decrease accounted for by the excretion of urea in the urine. In the hepatectomized animals whose kidneys also were removed the blood urea remained at a constant level for the entire course of the experiment, which in several instances was fifteen hours.

Dogs become jaundiced following complete removal of the liver within sixteen hours. The sclera and mucous membranes are definitely yellow. The urine secreted a few hours after the operation contains bile pigment and the plasma shows bilirubin within six hours. The amount of bile pigment in the blood increases progressively until death. As the same development of bile pigment occurs if the entire abdominal viscera are removed the bile pigment found in the blood, urine and tissues must have been formed outside the peritoneal cavity.

The liver plays an important part in the metabolism of carbohydrates and proteins but is not essential for the formation of bile pigment.

**D. Takats G. Some Problems of Jaundice and Their Significance in Surgery.** *Am. Surg.* 1914

By means of a simple chemical reaction two types of jaundice can be distinguished, viz. cholemia and

1. Icterus. Cholelithiasis results from a disturbance in the bile flow or incompetency of the biliary cell while icterus results from an overproduction of bilirubin (increase) in the blood.

2. Turbidity of liver function results from a decrease in the filtering and excretory function of the liver. It is a marked condition after operation. There is a marked deterioration of the liver function in cases of great importance.

3. Recovery of the function of the liver after operation should be subjected to operation as a rule. After 72 hours the liver function is not.

4. Hemolysis can be cured by rest and by the use of the liver. It is a marked condition in cases of the liver. The hemolysis ceases after rest and the liver function is not.

(See also p. 14)

Heyd C. C. MacNeal W. J. and Millam J. A.  
It points in its Relation to Infectious  
Disease of the Liver. A Clinical and Laboratory Study. (W. J. O. L. L. 1924, 1, 4)

It is a fact that in the liver there is a marked change in the blood flow and in the blood pressure. It is a fact that in the liver there is a marked change in the blood flow and in the blood pressure.

Microscopic examination of the liver shows a marked change in the blood flow and in the blood pressure. It is a fact that in the liver there is a marked change in the blood flow and in the blood pressure.

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The liver was grossly enlarged in about 50 per cent of the cases. In about 50 per cent of the cases the enlargement was confined to the right lobe. In particular the outer and posterior half of the lobe.

In the more chronic cases the enlargement was more marked. In some cases the enlargement was more marked. In some cases the enlargement was more marked. In some cases the enlargement was more marked.

Leucocytes and lymphocytes infiltration extended between the latter and distorted the liver. Many of the latter showed vacuolation of the liver. In some cases the enlargement was more marked.

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salsultus tendinum carphology and talking de lirum In rare instances there is marked motor excitation

Whether or not the liver is primarily at fault in these three conditions is not known The liver reacts to long-continued or habitual toxic irritation by two pathological processes viz degeneration of the liver cells and proliferation of connective tissue These processes apparently go on simultaneously Degenerating areas are replaced by connective tissue and intracellular material and as the result of the replacement and contraction there is atrophy of the parenchyma of the liver The author believes it reasonable however to assume that the conditions described are in some manner associated with liver dysfunction

MACNEAL found the liver subject to acute purulent inflammation secondary to severe purulent disease in the intestinal tract the gall bladder or the bile ducts These conditions result in a marked limitation of the specific liver parenchyma and a more or less marked increase of the fibrous tissue of the capsule and the interlobular trabeculae The liver participates in a great variety of general diseases and especially in severe infections and intoxications At operation the surgeon notes usually enlargement of the liver with rounding of its margins or opaque bands of fibrosis in the liver substance near the gall bladder This enlargement is evidently due in part to excess of fluid in the liver congestion and edema especially when there is an active inflammation in the gall bladder or portal territory

Under the microscope the soft swollen liver shows general dilatation of the vascular channel and a rich infiltration of the connective tissue trabeculae by lymphocytes and smaller numbers of polymorphous leucocytes In the more acute inflammations the endothelial lining of the capillaries may be visibly thickened In the irregularly enlarged liver the microscope reveals definite fibrous thickening of the connective tissue trabeculae and usually an excess of small bile ducts in this tissue Lymphocytic infiltration is more or less markedly apparent depending upon the presence or absence of exacerbation of the inflammatory process The lobules of irregular form and arrangement may be recognized They double indicate actual growth of the liver substance The firm smaller liver reveals under the microscope a still more marked excess of fibrous tissue in the trabeculae

KILIA states that in such cases the carbon dioxide combining power is markedly increased above the normal representing from 81 to 100 volumes per cent Of six cases recently studied four terminate fatally Two of the latter are cases of chronic disease of the gall bladder subjected to simple operations It has been determined that the increase in the carbon dioxide combining power is associated with a decrease in the hydrogen ion concentration and that hence there is a true alkalosis

In many of these cases the non protein nitrogen exceeds the upper normal level of 30 mgm per 100

ccm The urea nitrogen on the contrary does not show a corresponding increase in fact in some cases it is subnormal These findings indicate a corresponding increase in the rest nitrogen In many cases of gall bladder disease there is a mild hyperglycemia of from 0.140 to 0.200 percent Associated with this increase in the blood sugar there is an increase in the activity of the blood diastase

An increase in the cholesterol content of the blood has been observed in cases of obstruction of the biliary tract due to calculi new growths and other mechanical causes

The calcium and fibrin contents were found to be normal This fact however does not contraindicate the use of dilute solutions of calcium chloride to decrease the coagulation time Clotting requires ionizable calcium The chloride content of the blood was found to be normal except in cases showing an increased carbon dioxide combining power In the latter a decrease in the chloride concentration was noted EDWARD L CORWELL MD

Friedman J C and Straus D C Bilirubin Determination in Cholestasis Without Jaundice *J Am M A* 1941 94 11 1245

The normal bilirubin blood concentration is 0.3 to 0.5 part in 100,000 parts Visible jaundice occurs and bilirubin is excreted by the kidneys only when the blood content is 4 parts or more in 100,000 parts The Fouchet and the direct and indirect Van den Bergh are qualitative tests of hyperbilirubinemia

In Van den Bergh's direct test 0.25 ccm of Ehrlich's reagent is added directly to 1 ccm of serum from 5 ccm of blood which has been allowed to clot and has been centrifugalized In obstructive jaundice the color of the serum changes from a pale yellow to a violet or pink because of the formation of azobilirubin In non-obstructive jaundice the immediate direct reaction is negative or appears only after a delay of more than a minute

In Van den Bergh's indirect method 1 ccm of serum in 2 ccm of alcohol is centrifugalized and to 1 ccm of the supernatant fluid is added 0.25 ccm of Ehrlich's diazo reagent A positive test has a color change similar to that occurring in the direct method The indirect test is positive in both obstructive jaundice and non-obstructive jaundice Hence a negative direct reaction with a positive indirect reaction indicates non-obstructive jaundice Occasionally an increasing jaundice of cholestasis has a positive indirect and a negative or delayed direct test in the early stages and a strikingly positive direct reaction later Hence the jaundice of cholestasis is at first toxic with liver cell damage and later obstructive In normal blood the Ehrlich reaction is only indefinite or faint

The Fouchet oxidation test consists in mixing from 3 to 5 drops of Fouchet's reagent with an equal quantity of blood serum on a porcelain surface Hyperbilirubinemia of 1.60,000 or over results in a green color Fouchet's test is not positive for normal serum but is specific for bile pigment

*Fouchet's test is recommended for clinical purposes as simpler and less sensitive than the Van den Bergh test reacting only when the blood serum contains a pathological amount of bilirubin. Although the Van den Bergh test is more delicate the Fouchet reagent through its oxidizing action may break up combinations of bilirubin with substances such as proteins and give a positive result when the Ehrlich reagent fails to react. Neulengrath's quantitative determination of bilirubin is of only relative value because of complicating substances.*

In a study of twenty nine cases of cholecystitis hyperbilirubinemia was found in 13 per cent—in 91 per cent during the attack and in 73 per cent during the interval when there were gastric symptoms but pain was absent. Ninety per cent of the cases of cholecystitis without evident jaundice showed hyperbilirubinemia. Between the attacks the bile pigment increase in the blood bears no relation to the presence or absence of stones or other clinical signs of an inflammatory reaction such as fever or leukocytosis.

The presence of hyperbilirubinemia differential cholecystitis from gastric and duodenal ulcer or carcinoma but not from pneumonia. Latent jaundice was found in 30 per cent of nonicteric cases of pneumonia. Hyperbilirubinemia may be present in acute endocarditis splenomegaly and pernicious anemia.

WALTER C. BERKE, M.D.

**Pénafe** Calculous Cholecystitis and Calculous Appendicitis. Cholecystectomy and Appendectomy. *My Rec very (Chlé) 11 1 1 p d re al ules h lé ystet m t ppe d ceet m guér so ) B II et mém Soc 1 d P 9 4 civ*

The patient a woman 37 years of age gave a history of digestive disturbances enteritis frequent attacks of nausea and painful areas in the epigastrium and iliocecal region for a period of fifteen years. There had been ten attacks of hepatic crisis with nausea vomiting and fever. Some of them were characterized by icterus dark colored urine and acholic stools. Following the last attack the digestive disturbances and pain in the right iliac fossa perished.

Cholecystectomy and appendectomy were done. The adherent thickened gall bladder contained fifteen calculi and the appendix enclosed a biliary calculus embedded in mucus. The patient made an uneventful recovery.

WALTER C. BERKE, M.D.

**Erdmann J F** A Clinical and Operative Consideration of Traumatized Bile Ducts. *Am J S 1 9 4 1 1 97*

The author goes into considerable detail regarding the causation and types of biliary fistulae. In connection with the causation he discusses various pathological processes and the most common errors made in operations on the biliary tract.

Erdmann classifies injuries of the bile ducts into two groups—leaking and non-leaking injuries. He

urges thorough preoperative treatment especially in the cases of febrile patients. This should consist in decreasing the coagulation time of the blood by the use of calcium salts and blood transfusion and measures to improve the general condition.

In describing the technique for the repair of a traumatized bile duct Erdmann emphasizes the importance of using a tube of the proper size and leaving it in position for a sufficient length of time to permit union of the duct. He believes that drainage of the wound is undesirable except for approximately forty-eight hours.

The article is concluded with a report of eight cases which have been under the author's care.

J. W. WOLFE, M.D.

**Bohmans G** A Case of Cyst of the Common Bile Duct. *Am J S 1 9 4 1 1 94*

The author reports a case of so-called idiopathic cyst of the common bile duct in a boy 3 years of age. Cholecholeodochoduodenotomy was performed successfully in two stages separated by a short interval. The first stage consisted in the formation of a fistula leading to the anterior abdominal wall.

About fifty cases of this type have been reported in the literature. In the author's opinion the condition should be described as a dilatation rather than as a cyst or diverticulum as it is essentially a distention of the retroduodenal portion of the bile duct occurring in spite of a simultaneous dilation of bile to the intestine. All of the cases in which recovery resulted were treated by cholecholeodochoduodenostomy.

**McClure E L, Jones C M, Wetmore A S** and **Reynolds J** Studies in Pancreatic Function. The Enzymic Concentrations of the Duodenal Contents in Health and Disease. *Am J S 1 9 4 1 1 649*

The duodenal contents studied were obtained from normal persons and those with pathological affections of the pancreas liver or gastrointestinal tract. The enzyme concentrations were determined by estimating the activity of the proteolytic lipolytic and amylolytic enzymes which were active in alkaline media.

Proteolytic activity was estimated by all weights of the duodenal contents to act in a solution of casein. The calcium not affected by the proteolytic enzyme was then precipitated with metaphosphoric acid solution. The index of proteolytic concentration was taken to be the number of milligrams of non-protein nitrogen left in solution by metaphosphoric acid. The non-protein nitrogen was determined by an adaptation of the method of Folin and Wu for the determination of non-protein nitrogen in the blood.

Amylolytic activity was estimated from the number of milligrams of glucose developed by the action of a standard quantity of duodenal contents in a solution of starch. The index of amylolytic concentration was taken to be the total number of

milligrams of glucose developed as estimated by the method of Folin and Wu for the determination of sugar in the blood.

Lipolytic activity was estimated by allowing the duodenal contents to act on a true emulsion of cotton seed oil and determining the amount of acidity developed by titrating with tenth normal sodium hydroxide solution. The index of lipolytic concentration was taken to be the total number of cubic centimeters of tenth normal sodium hydroxide necessary to neutralize the acidity developed.

The duodenal contents were obtained by siphonage with the gastroduodenal tube the subject reclining on his right side.

In the study of the fasting stomach twenty-two specimens were obtained from six normal persons. The amounts ranged from 29 to 135 c. cm. the color was a pale yellow and the viscosity varied from slight to moderate. The proteolytic concentration ranged from 1.2 to 5 mgm. of 100 protein nitrogen the lipolytic concentration from 0.0 to 2.7 c. cm. of sodium hydroxide and the amylolytic concentration from 0.3 to 6.7 mgm. of glucose.

A study was made also of the effect of meals of moderate size upon the enzyme concentrations. For this purpose a semi-solid meal of milk and cottage cheese representing a mixed diet of protein, fat and carbohydrate was used. During the four hours required for the emptying of the stomach the duodenal contents were collected at hourly periods. The enzyme concentrations of the hourly specimens were comparable in other words they did not show a regular increase from the first to the fourth hours. These findings demonstrated that hourly collections of duodenal contents contained enzyme concentrations representative of those occurring throughout the period of gastric digestion.

Studies were next made of the effect of single food substances on the enzyme concentrations. The food substances used were casein, yolk, olive oil and arrow root starch. After digest on these substances appeared in the duodenal contents either immediately or within a period of twenty minutes. Except for the presence of the foodstuff there was no apparent change in the character of the contents of the duodenum and no increase in the enzyme concentrations until after from ten to forty-five minutes. The color of the contents then changed abruptly from a pale yellow to a dark brown or very dark yellow and the viscosity and enzyme concentrations increased.

To determine the effect of the ingestion of water on the enzyme concentrations the contents of the fasting stomach were collected for thirty minutes the subject was then given 50 c. cm. of tap water to drink and the gastric contents were then again collected for period ranging from forty-five minutes to one hour. In some cases the enzyme concentrations were diminished after the ingestion of water possibly by dilution but the concentration of one type of enzyme was sometimes increased while that of another type remained approximately

the same or was decreased. The resultant enzyme concentrations were comparable to those obtained for the contents of the fasting stomach.

These findings show very definitely that the enzyme concentrations of the duodenal contents were very much greater after the ingestion of food than after the ingestion of water. They demonstrate also that although it stimulates the secretion of gastric juice water is a less potent stimulant to the secretion of pancreatic juice than food. After its ingestion acid fluid is ejected from the stomach into the duodenum. From this it is concluded that something more than the mere ejection of acid gastric contents into the duodenum is necessary for the definite stimulation of pancreatic secretion. It was demonstrated also that there is a relationship between the degrees of enzyme concentration and the kind of food ingested. On the other hand no relation was found between the enzyme concentrations and the degree of acidity of the duodenal contents.

In one series of experiments water twentieth normal hydrochloric acid glucose solutions and oil were introduced directly into the duodenum. The results were exactly the same as those obtained after the ingestion of these substances by mouth.

In a study of the enzyme concentrations of the duodenal contents of patients with organic pancreatic disease it was found that in cases of acute or chronic lesions which did not involve the head of the pancreas the concentrations were normal while in cases of destructive lesions involving the head of the pancreas such as cancer, acute pancreatic necrosis and chronic pancreatitis with or without extensive involvement of the glandular parenchyma the concentrations were abnormally low. The intermediate value between normal and abnormally low concentrations was characterized by normal concentration of one or two enzymes and a decrease in the others below the minimum normal.

Normal concentrations were found when there was no obstruction to the pancreatic duct. In one of three cases in which a diagnosis of cancer of the head of the pancreas had been made no bile pigment was observed in the duodenal contents while in another the duodenal contents were pale green. However the finding of normal enzyme concentrations in these cases cast doubt upon the diagnosis of pancreatic malignancy. At laparotomy a stone was found in the common duct in each case. In three cases in which calculi obstructed the ampulla of Vater the first examination showed the enzyme concentrations to be much below normal. In two of the cases no bile at all was seen and in the third the contents were a pale green. After repeated lavage with magnesium sulphate solution the duodenal content showed bile pigment and normal enzyme concentration. On the other hand in four cases of cancer involving the bile ducts repeated lavage failed to be followed by bile in the duodenal contents. In two of these cases in which there was a cancer of the head of the pancreas involving the pancreatic duct lavage did not produce a change in the abnormally





# GYNECOLOGY

## UTERUS

Thomaa Complete Urinary Retention Caused by a Fibroid of the Posterior Wall of a Retroflexed Uterus (Retentio completio urinariae a fibroma del paroi postérieure de la matrice en retroflexion) *Bull Soc Obst Gynec d P r* 1914 x 218

The onset of acute retention preceded a menstrual period by a few hours. On vaginal examination the cervix was found directed upward and forward two fingerbreadths above the symphysis. In the hollow of the sacrum was a firm tumor. After catheterization which withdrew 70 ccm of urine the patient began to urinate spontaneously every five or six hours. Operation was decided upon after seven days. On preliminary catheterization 3 liters of urine were withdrawn.

The anatomical specimen consisted of a retroflexed uterus with two large fibroids on the posterior wall and four small fibroids in the fundus.

The failure to empty the bladder at the first attempt was due to separation of the lower portion of the bladder from the rest of the cavity by the protruding cervix.

Elongation of the urethra and elevation of the bladder are two important factors causing retention of urine and the tumors most apt to produce these conditions are those situated in the cervix or the posterior wall of a retroflexed uterus.

Direct pressure on the urethra is effective only when the softening and hyperemia of the tumor occurring during menstruation allows it to become molded against the symphysis pubis.

ALBERT F. DEGRAAT, M.D.

Miller C. J. A Review of a Series of Cases of Fibroids of the Uterus from the Records of Charity Hospital. *N. Y. Obst. Gynec. Soc. J.* 1924 xvi 40

This article is based on 150 cases admitted to the Charity Hospital, New Orleans, during the first few months of the year 1921. More than 91 per cent of the patients were colored women. The youngest patient was 20 years of age and the oldest 76 years. In 39.4 per cent of the cases there was a history of dysmenorrhea. Forty-one per cent of the married patients were sterile. The known duration of the tumor ranged from one month to twenty-two years.

The symptoms complained of were pain, menstrual irregularities, urinary symptoms such as frequency and pain, and general symptoms such as a feeling of weight, digestive disturbances, chills, and fever.

The Wassermann test was positive in 17 per cent of the cases and smears were positive in 13 per cent. Three colored patients had both syphilis and gonorrhea.

In no case was the hemoglobin below 40 per cent and in only eleven was it below 70 per cent.

Of the 150 patients twenty-three were not operated upon for various reasons; seven refused operation and in the remainder operation was contra-indicated by cardiac, renal, or pulmonary disease or by active syphilitic lesions.

Supravaginal hysterectomy was done in 66 per cent of the cases, complete hysterectomy in 21 per cent, and myomectomy in 8 per cent. In the remainder the treatment included vaginal removal, colpotomy, and radium irradiation.

In forty-two cases the growths were in the lower uterine segment; in eighteen they were intraligamentous; in nine they involved the fundus; in eleven they were in the posterior cul-de-sac, and in two they encroached on the vagina.

The tumors were multiple in all except one case and ranged in weight from 5 to 30 lbs.

Associated carcinoma was found in three cases and fibrosarcoma in one.

The morbidity of the supravaginal operation was 25 per cent and that of total hysterectomy 27 per cent. The length of time the patient remained in the hospital was about the same for both operations.

The five women who died were subjected to supravaginal hysterectomy. One death was due to fibrosarcoma, one to sloughing myoma, one to bronchopneumonia, one to peritonitis, and one to shock and hemorrhage.

F. EDWARD BISHOP, M.D.

Cotte G. The Treatment of Uterine Fibromata: Anatomical Considerations of a New Series of 121 Cases Treated in a Period of Eighteen Months (Sur les tumeurs utérines fibromateuses d'après nos observations anatomiques sur une nouvelle série de 121 malades traitées dans huit mois à la Clinique Gynécologique). *Lyon ch.* 1924 xxi 24

During the past eighteen months Cotte has treated 121 cases of uterine fibroma. In two cases an emergency operation was necessitated by other conditions but did not save life. Of the 119 remaining cases, fifteen were treated with radium and 104 were treated surgically.

In the cases treated with radium there was one death. This was due to ethyl chloride anesthesia induced for exploration of the uterine cavity before the radium was placed. In two cases the end result was poor.

In the 104 cases treated surgically there were fifty-two total hysterectomies with fifty-one recoveries and one death; thirty subtotal hysterectomies with twenty-nine recoveries and one death; eighteen vaginal hysterectomies with eighteen recoveries; two abdominal myomectomies with one recovery and one death; and two vaginal myomec-

tomies with two recoveries. In four cases a localized phlebitis developed.

Radium is indicated only for small fibromata or fibromatous uteri with menorrhagia. In cases of large complicated fibromata it fails to effect a cure and when not indicated is dangerous. In the author's cases there were fifteen cases of painful fibroma in which operation demonstrated that radium therapy would have been harmful. These included such conditions as polyfibromatous uterus, fibroma with uterine retroversion, fibroma and dermoid cyst or fatomatous fibroma, fibroma evolving in aseptic necrosis, etc. Operation resulted in a cure in every instance.

Added to seventy-five cases which Cotte previously reported, this series of 121 cases confirms his opinion that before a patient is subjected to radium treatment it is necessary to determine accurately not only the anatomical character of the tumor but also the functional disturbances it causes in order to differentiate a lesion which should be treated surgically from one amenable to radium action.

W. A. BEEVER

Hanks M. E. The Roentgen Ray as a Remedy in Fibromyomata and Other Benign Gynecological Disease. A Review of 221 Cases. *Radiology* 1924; 1: 317.

Large tumors conforming to a favorable type may yield to treatment with the X-ray. One tumor extending an inch above the umbilicus has entirely disappeared. Age is of little importance in the effect of radium. Twenty of the patients were under 40 years of age and twelve were 35 years or less. The youngest was 30 years. The younger the woman the more gradual should be the application of the X-ray in order that sufficient time may be given for readjustment.

The fibroid tumor most susceptible to the X-ray is the hemorrhagic intramural fibroid which is not seriously complicated, grows below the umbilicus and occurs in a woman 40 years of age or over. In 75 per cent of 160 cases of fibroids in which the treatment has been completed, no tumor is demonstrable.

Of a second group of patients treated about 10 per cent are free from symptoms and in excellent health. Tumors much reduced are gradually becoming small. In 7 per cent of the cases the condition was relieved, the tumor reduced and rendered non-painful and the menopause established, but there were serious associated complications. Four patients of this group died several months after the treatment was concluded. Two died of chronic heart disease, one of intestinal cancer not associated with the tumor and one of pneumonia. None of the tumors became malignant.

Simple follicular cysts of the ovary arising in the graafian follicles and blood cysts of the corpus luteum are also modified by the X-ray. They either rupture or recede and are not followed by others. No patient with erosion and degeneration of the

cervical glands has failed to regain perfect health and in every instance the leucorrhoea has gradually disappeared.

In five cases pruritus vulvae was cured during treatment for fibroids.

In hemorrhage of the menopause the X-ray is almost specific when the etiological condition is fibrous hyperplasia of the mucosa or chronic endometritis.

EDWARD L. CORNELL, M.D.

Patel Th. C. Cases of Uterine Fibroma Treated by Radium Therapy and Then Operated Upon. *The Indian Medical Journal* 1924; 23: 1.

The author reports the effect of the radium therapy on the size of the tumor, the hemorrhage and the operation.

In Case 1 the tumor became definitely smaller but seven years later rapidly increased in size. In Case 2 there was no change except a later increase in the size of the growth due to a 10 months pregnancy. In Case 3 the tumor appeared to decrease under the radium therapy but in reality did not change.

In Case 4 the hemorrhage was arrested but reappeared when the tumor became larger. In Case 5 the menses continued and the treatment did not prevent the occurrence of pregnancy. In Case 6 the treatment merely diminished the hemorrhage.

In two cases the cellular tissue was found at operation to be hard and avascular and there were other changes rendering surgery difficult. In one case the cure was a radiodermatitis.

Patel believes that such results should be reported because of the exaggerated claims made in favor of radium therapy for the treatment of uterine fibromata.

W. A. BEEVER

Goulloud. Fifteen Cases of Pregnancy Following Abdominal Myomectomy. *Quart. J. Med.* 1924; 17: 263.

The author's statistics and those of other gynecologists on the incidence of pregnancy after myomectomy are very encouraging. Benoit Conin's statistics show five pregnancies in twenty-six cases in which myomectomy as performed on a married woman in the child-bearing age. Archard reported that of seventy-five married women subjected to myomectomy fifteen became pregnant.

In the author's opinion myomectomy does not predispose to any serious obstetrical complication. While miscarriage is not an uncommon sequel, close investigation of the patient's history often reveals a distinct tendency toward abortion prior to the operation. In a series of ninety-five cases reported in the literature, pregnancy occurred 128 times after myomectomy. There were 100 full term deliveries, five preterm deliveries and twenty abortions. In the 100 full term deliveries there were ninety-three cephalic presentations, three breech presentations and one face presentation. The

author was able to find in the literature only three cases of rupture of the uterus following myomectomy one of these was fatal

On the basis of the literature and fifteen cases of pregnancy following myomectomy reported in this article the author comes to the following conclusions

1 In cases of fibroids in women in the child bearing age myomectomy if possible is preferable to hysterectomy or radium therapy

2 If enucleation of the growth is found at operation to be impossible and if the woman is still in the child bearing age it is better to close the abdomen and give guarded doses of radium or the X rays

3 The possibility of malignant change in a fibroid must be considered before a myomectomy is done

4 Pregnant women who have been subjected to myomectomy should be delivered in a hospital

JAMES V. RICE, M.D.

Norris, C. C. and Vogt, M. E. Carcinoma of the Body of the Uterus (with the Report of 115 Cases). *Am J Obst & G* 94 5

Among 22,514 gynecological cases observed during the last twenty three years at the University Hospital Philadelphia there have been 115 cases of fundal carcinoma. During a similar period 346 cases of cervical carcinoma were found among 356 cases of carcinoma of the genital tract. Carcinoma of the fundus constituted about 1.2 per cent of all cancers of the genital tract and about 25 per cent of all uterine cancers.

Carcinoma of the body of the uterus is less frequent than cancer of the cervix. This may be due to the fact that chronic cervicitis is a common lesion whereas true chronic corporeal endometritis is relatively infrequent. Carcinoma of the fundus is a disease of advanced life. In the series of cases reviewed more than 1 per cent of the patients were 51 years of age or older. Childbirth plays little part in the etiology of this neoplasm. Twenty six per cent of the women were unmarried.

The most important signs are hemorrhage and discharge. In 81 per cent of the cases hemorrhage was the first sign. Pain, cachexia and loss of weight generally indicate advanced and inoperable tumor. Only 25 per cent of the women sought treatment in the early stage and only 34.8 per cent of those treated three years ago are alive. Absence of pain and on recognition of the significance of irregular bleeding account for the majority of advanced cases. The histologic examination of curettings often almost certain means of diagnosis even in early stage. The Clark test which consists in the passage of a sterile sound of great practical value. Absence of bleeding following this test goes a great way toward excluding carcinoma. The test is an easy procedure and its more general adoption will result in the recognition of many early cases. In the series of cases reviewed the clinical diagnosis was correct and positive in 57 per cent. In 23 per cent the cancer was suspected in 19 per cent unsuspected.

In 75 per cent of unsuspected cases the symptoms caused by the cancer were masked by those produced by pre-existing myomata. As often happens the cancer was associated with a myoma in 20.8 per cent of the cases.

The prognosis depends chiefly on the integrity of the myometrium. Of the patient who had had symptoms for six months or less 56.5 per cent were alive at the end of three years. Of those with symptoms for from seven to twelve months 31.2 per cent survived and of those with symptoms for more than one year only 17.8 per cent survived.

The treatment of choice is panhysterectomy and bilateral salpingo-oophorectomy. Postoperative irradiations with radium or the deep X-ray are of distinct value. Radium irradiation is the greatest palliative measure and prolongs life. Radium irradiation offers a hope of cure even in cases too advanced for operation. Hysterectomy gave a three year cure in 37.5 per cent of the cases whereas in a like series irradiation resulted in a three year cure in 45 per cent. If the group treated by irradiation had been larger it would probably have been found that hysterectomy gave the better results.

In the early cases hysterectomy gave a three year cure in 47 per cent. The mortality of hysterectomy was 7 per cent and that of radium treatment 6 per cent. The total mortality from all causes in the entire series of 115 cases was 56 per cent. The total number of three year cures was eighty six 34.8 per cent of these patients are now alive.

Carcinoma of the fundus must be considered a relatively malignant form of cancer. In the author's opinion on the belief that from 60 to 75 per cent of the cures are permanent is fallacious.

Preliminary curettage plays little part in the dissemination of the condition and its value as a diagnostic procedure in the early stages far outweighs its disadvantages. Without diagnostic curettings the majority of early cases would be overlooked and many normal uteri would be sacrificed.

Carcinomatous degeneration occurred in less than 3 per cent of the endometrial polyps. All of the patients are alive. In these cases the important factors are the condition of the pedicle of the tumor and the presence or absence of an implantation growth.

EDWARD L. CORNELL, M.D.

Cille, G. W. Carcinoma of the Uterus. *Am J Obst & G* 94 523

Portmann, U. Radiation Therapy of Cancer of the Uterus. *Am J Obst & G* 1924 vi 530.  
Jone, T. E. The Role of Radium in the Treatment of Carcinoma of the Uterus. *Am J Obst & G* 194 541

CILLE. In sixty of the 270 cases of carcinoma of the cervix regarding which the author has sufficient data for study a radical operation was performed. The operability in this series was therefore 27.3 per cent. Of ninety-one cases of carcinoma of the fundus a radical operation was performed on seventy making an operability of 76.9 per cent.

In these series of cases the incidence of both carcinoma of the cervix and carcinoma of the fundus was highest between the ages of 50 and 60 years. Six of the women with cancer of the cervix were unmarried. Of the women with carcinoma of the fundus seventy eight were married and ten were unmarried.

The higher incidence of carcinoma of the uterus in married women and especially in those who have borne children indicates that laceration and irritations of the cervix are to be considered as primary predisposing causes. Squamous cell carcinoma predominates among carcinomata of the cervix and adenocarcinoma among carcinomata of the fundus.

In any case of abnormality of uterine function in the childbearing period meticulous care should be exercised to determine the cause. In a case of abnormal discharge after the menopause immediate vaginal hysterectomy should be done followed by the application of radium. Radium and X-ray therapy should be used in the treatment of all cases of carcinoma of the cervix, final judgment as to the abandonment of surgery in these cases being reserved. Certain apparently inoperable cases of carcinoma of the fundus may become operable after a period of rest and the application of proper therapeutic measures.

Extensive correlation of the experience of numerous observers is essential for the establishment of a correct basis of judgment as to the relative merits of surgery, radium and the X-ray in the treatment of carcinoma of the fundus or cervix of the uterus.

**PORTMANN.** In view of the present status of our knowledge regarding the relative limitations of surgery, radium and the X-ray the proper treatment of malignant disease consists not in the use of any one of these agencies but rather in the employment of certain combinations of methods according to the indications in the particular case. Most surgeons now concede that radium therapy is the preferred method of attacking cervical carcinoma. Even the small group of very early cases that may be successfully treated by operation are as effectively and more easily treated with radium. During the last eighteen months the Cleveland Clinic has practically abandoned the surgical treatment of cervical carcinoma. With deep X-ray therapy they have a weapon which is as useful as radium and broader in its application. However as a result of experiments Portmann concludes that by means of the X-ray alone it is impossible to obtain sufficient intensities of radiation to carry a therapeutic dose into the most deeply situated lesions such as a carcinoma of the uterus.

The treatment of carcinoma of the cervix will become entirely confined to radiation therapy. Radium has already proved its value. In a small group of cases of early involvement surgery and radium are equally successful. In a second group with vaginal involvement the operative procedure becomes more complicated and hazardous and although it gives good results radium gives equally good or better

results. A third group of cases in which there is some involvement of the parametrium and a fourth in which the disease is widespread the surgeon classifies as inoperable. These two groups include about 62 per cent of all cases of carcinoma of the uterus. In cases of this type radium therapy has proved to be no less successful than surgery and as the technique of radium application is being improved progressively better results are being reported. It is particularly in the treatment of cases of Groups 3 and 4 that intensive treatment with radium and X-ray proves better than surgery. Experience thus far leads the author to conclude that the combination of radium and short wave X-rays gives greater benefit than previous therapeutic methods.

The cases in which radiation has been least successful are those in which it was preceded by operation. If cauterization is done in cases of cervical carcinoma it should be followed by irradiation immediately. Except for diagnostic purposes curettage and excision of tissue should not be done unless radiation is administered at the same time. The most important contraindication to radiation therapy is inflammation.

**JOES.** In inoperable cases radium therapy yields excellent results. Of nine patients treated more than three years ago four (44 per cent) are now apparently well.

In a second group of cases—those treated with both surgery and radium—the results were very poor. The combined treatment has therefore been abandoned.

A third group of cases—in which both radium and deep X-ray therapy were used—shows the best results although since this combination method has been employed for less than a year the statistics upon which to base a conclusion regarding three or five cures.

The method of applying radium changes from time to time with increasing experience and in different cases. It is impossible to treat all cases alike. In some it is best to use needles while in others it is impossible to use needles. Needles should be employed whenever possible because they give the most homogeneous radiation.

Seventy-five milligrams of radium screened with 1 mm. of brass are placed in the cervix, 50 mgm. against the cervix and 75 mgm. (in nine needles) inserted at various points in the cervix. The treatment is continued for from twelve to sixteen hours. At the end of from three to four weeks 25 mgm. of radium screened with 1 mm. of brass are placed against the cervix for from twelve to fifteen hours. Therefore a total dosage of from 4,000 to 4,800 mgm. hrs. is given. After the second treatment the patient is discharged but is asked to come in again for observation three or six months later.

On account of the excellent results of the surgical treatment of carcinoma of the fundus of the uterus Jones has not yet advocated radiation for this condition. However during the past year he has

seen a recurrence in the upper end of the vagina six months after a complete hysterectomy in three cases and all of these patients died less than a year after the operation. EDWARD L. CORNELL M.D.

Clark J. G. and Block F. B. Relativ e Values of Irradiation and Radical Hysterectomy for Cancer of the Cervix. *Am J Obst & Gyn* 19 4 11 543

The authors have compiled the recent statistics from ten surgical clinics.

The operability ranges from 15.7 to 46.6 per cent but the frequently repeated statement that low operability means a high percentage of cures is not always true. In the entire series the primary mortality ranged from 5 to 26.6 per cent. In 1,539 cases subjected to an abdominal operation a five year cure was obtained in 608 (39.5 per cent). The percentage of cures is slightly higher and the primary mortality is slightly lower than Janeway found them to be a few years ago.

While radium is widely used and a great deal has been written on the subject there are few reports of five year cures because the treatment is still new.

An analysis of cases recorded in the literature shows that in general radium effects a cure in 43 per cent of cases of cervical cancer whereas radical operation gives a cure in only 39.5 per cent. More over in the 9 per cent of inoperable cases death would have occurred under any other treatment.

In the twenty two operable cases in the authors series a cure was obtained in 27.2 per cent. Of the patients who were inoperable 6.7 per cent were alive and free from evident recurrence at the end of five years. Of the total of 44 patients only 15 per cent of whom were operable 30.4 per cent were alive at the end of five years. During the last four or five years the authors have always irradiated under gas anesthesia.

Radium is a palliative remedy of inestimable value in the great majority of hopeless surgical cases and of curative value in a small percentage. While it compares most favorably with the radical abdominal operation the authors do not take issue with the skillful specialist who adheres to the radical viewpoint provided he supplements his operation with postoperative irradiation.

EDWARD L. CORNELL M.D.

Iveyman H. J. The Technique and Results in the Treatment of Carcinoma of the Uterine Cervix at "Radiumhemat" Stockholm. *J Obst & Gyn & Brt Emp* 9 4 xxx

Of the sixty six cases treated in 1914 there were forty three in which the symptoms did not entirely disappear only palliation being obtained. In two thirds of these cases the ulceration was completely healed and in 60 per cent superficial healing with resulting absence of hemorrhage and discharge persisted until death. The hemorrhage ceased in 98 per cent the discharge in 69 per cent and the pain in 78 per cent. In half the number of cases the

improvement lasted for about half a year in many cases for more than a year and in some cases for two years.

In the past ten years the technique has been perfected new apparatus has been obtained a coincident intra uterine and vaginal application of radium has been consistently carried out and cautious attempts have been made to concentrate the treatment further. However the principles inaugurated by Forsell are still dominant.

For gynecological purposes the author employs Dominick tubes only. All of the tubes contain radium sulphate. The tube walls are made of gold of gold and silver or of platinum and silver. The thickness of the metal is equivalent to 1 mm of lead.

The applicators intended for intra uterine use are cylindrical. Wrapped with rubber they are introduced into the uterus sterile. For vaginal application cylindrical or flat applicators are generally employed. The cylindrical applicators are used two and two together while one flat applicator is generally used alone.

The choice of cylindrical or flat applicators depends upon the appearance of the tumor surface. Cylindrical applicators are most suitable when the tumor is crater shaped. Flat applicators are most convenient in disk shaped tumors. Large cauliflower growths sometimes demand a special arrangement such as several applicators or radium packs of sheet lead. An attempt is made to cover the vaginal surface of the tumor with radium as accurately as possible.

The typical treatment in a case of carcinoma of the cervix is as follows.

Three treatments are given—the second one week after the first and the third three weeks after the second. At each treatment the radium is used in the same amount and for the same length of time as follows.

Quantity of radium. In the uterus 33.7 or 40.1 mgm in the vagina about 9 mgm. Time of treatment twenty two hours equivalent to from 7.41 to 9.32 mgm hrs in the uterus and 1.000 mgm hrs in the vagina. Filter equivalent to 3 mm of lead.

The total treatment is therefore from 2.220 to 2.640 mgm hrs in the uterus and about 4.500 mgm hrs in the vagina.

Prior to the application of the radium a purgative is given. Before examination of the growth and the removal of a portion of it for microscopic examination 1 cgm of morphine is administered. The vagina and the tumor surface are then cleansed carefully with benzine. The author warns against all such procedures as cauterization and excoriation. As long as the tumor shows a tendency to heal no further treatment is given.

If a tumor begins to grow again during the second six months or later a fresh careful treatment may be tried though preferably this is not done until about a year after the first and then only one application is made with a small dose.

As a rule a tumor which has been steadily improving for a year following the treatment is clinically

Diet must be considered a factor in sterility but is probably of little importance in the cases seen in private practice

Of fifty five patients with uncomplicated dyspareunia 40 per cent subsequently conceived. The treatment of these cases consisted in dilatation of the hymen and vagina and the use of tampons and douches

Of fifty seven patients with retroversion of the uterus 25 per cent later became pregnant. However no case in which the retrodisplaced uterus was adherent was treated successfully. This fact indicates that not the displacement but the inflammatory lesion involving the tubes is the chief cause of the sterility. Some of the cases of displacement of the uterus were treated by suspension operations and some by the use of pessaries. Four patients with uterine displacement became pregnant after cervical dilatation.

Tubal infection was found in 82 per cent of the cases. In the majority of these it was gonorrheal and associated with cervicitis and displacement. In three of twelve cases in which the tubal adhesions were freed and salpingostomy was performed

pregnancy occurred subsequently. Of thirty six patients who were unwilling to undergo operation and were therefore given non-operative treatment none conceived.

Of twenty seven women with fibroids eleven were subjected to myomectomy. Four of the latter became pregnant subsequently.

Of two patients subjected to artificial insemination one became pregnant.

There were seventy three patients with uncomplicated cervicitis. The fact that eighteen of them conceived after treatment indicates that cervical discharges are a definite factor in sterility. Of eighty three women with complicated cervicitis twenty subsequently conceived. In the authors' opinion the most effective non-operative treatment of cervicitis is radial cauterization.

The Rubin test was used in thirty five cases and in four of these the findings were checked by operation. This test should be employed to determine the results of salpingostomy. The authors agree with Ward and Aldridge that it is of great value in diagnosis but as yet has not proved of aid in treatment.

ROSCOE JERSON M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Stander H J The Blood Chemistry During Pregnancy B H J A Hopk s H p B H 924 xxx 33

The blood of the normal non pregnant woman contains approximately 32 mgm of non protein nitrogen 18.5 mgm of urea nitrogen and 3.3 mgm of uric acid per 100 c cm. The carbon dioxide combining power of the blood plasma is about 52 volumes per cent.

In normal pregnancy the non protein nitrogen and the urea nitrogen content are less than in the non pregnant state the averages being 28 and 12.48 mgm per 100 c cm respectively. The uric acid is about the same as in the non pregnant state while the carbon-dioxide combining power drops from 52 to 45 volumes per cent. The ratio of urea nitrogen to non protein nitrogen is also decreased being about 44.5 to 57.

In severe cases of neurotic vomiting the non protein nitrogen and uric acid values are increased but return to within normal limits as the patient improves.

In nephritic toxæmia the non protein nitrogen tends to increase to an extent fairly proportional to the severity of the condition. In the definitely pre-eclamptic type of toxæmia this tendency is less striking. In nephritis the ratio of urea nitrogen to non protein nitrogen is definitely increased while in the pre-eclamptic type it is either normal or decreased.

In true eclampsia fairly normal values are found for the non protein nitrogen and the carbon-dioxide combining power and the ratio of urea nitrogen to non protein nitrogen is similar to that found in pre-eclamptic toxæmia.

In all three types of toxæmia—nephritic pre-eclamptic and eclamptic—the uric acid content of the blood is definitely elevated.

EDWARD L. CORTELL M D

Fauci and Paquet Fibromata Complicating Pregnancy Caesarean Section Followed by Hysterectomy in a Patient with Basedow's Disease (Fibromes d'un utero gestationnel compliqués d'une hyperthyroïdisme. Hystérectomie et césarienne chez une femme atteinte de Basedow.) B H Soc d h t d gy t d Pa 94 34

The patient was a woman 33 years old who was pregnant for the second time. Her first pregnancy which occurred in 1921 was interrupted in the 5th month. The delivery and puerperium were normal. A diagnosis of Basedow's disease was made on the basis of exophthalmos, moderate goiter, tachycardia and trembling of the hands which was

not modified by voluntary movements. These symptoms began after the first delivery.

From January to October 1923 weekly applications of the X-ray were made to the enlarged thyroid but the goiter did not change materially during this period. The last menstrual period occurred in February 1923. The pregnancy was normal up to the fifth month. At this time following retention of urine the presence of a fibroma was discovered on examination. On November 15 the membranes ruptured. The enlargement of the uterus and the history indicated that the pregnancy was at term. On vaginal examination a hard voluminous immovable mass was felt filling the entire anterior cul-de-sac. Behind this mass and very high in the vagina the cervix was felt directed toward the sacral cavity. The fetal head could not be palpated. On abdominal palpation several fibromata of moderate size were felt on the anterior surface of the uterus.

Under chloroform anesthesia a caesarean section was performed with the extraction of a female child weighing 2.800 kgm. A subtotal hysterectomy was then done. The patient made an uneventful recovery.

The authors believe this case is of interest because of the number of complications. The exophthalmic goiter was entirely independent of the pregnancy as it began more than a year after the first delivery and during the second pregnancy remained practically unchanged. In the second pregnancy there was vomiting, albuminuria or placental hemorrhage.

SALVATORE DI PALMA M D

Reeb Peritonitis of Appendiceal Origin and Pregnancy at the Seventh Month (Péritonite d'origine appendiculaire à gros es du VII<sup>e</sup> m s.) B H Soc d h t d gy t d Pa 104 11 24

The patient a primipara in the seventh month of pregnancy was operated upon the third day after the onset of acute appendicitis. The appendix was found gangrenous and perforated and a generalized peritonitis was well established. Labor occurred the next day. After phlebitis and pulmonary infarction the patient recovered.

The occurrence of acute appendicitis with perforation and peritonitis in association with pregnancy is very rare. At a school for midwives the case reported was the first case in 5000 deliveries. This rarity is surprising as pregnancy aggravates intestinal stasis which is assumed to be one of the chief predisposing causes of appendicitis. The prognosis of the appendicitis is rendered less favorable by pregnancy and particularly by pregnancy at an advanced stage as the diagnosis is made difficult, the operative difficulties are increased and if labor occurs soon after the operation the walling-off process is disturbed.

ALBERT F. DEGRAAT M D



Lemierre A and Ralli F: Colibacillæmia of Pregnancy without Pyelonephritis (Colba 7) *Ann Surg* 1944 119: 435-442  
 See also 444 p 2 1944 119: 442

The authors report the case of a young woman five months pregnant who suffered repeated attacks of fever chills and intense headache. The temperature ranged from 38.5 to 40.5 degrees C. Blood cultures showed the presence of colibacilli. There was no pain in the kidneys but the urine showed large numbers of red blood cells granular casts and leucocytes and a slight amount of albumin. Recovery was spontaneous. The bacteremia probably had its origin in the colon as the patient had very marked constipation.

The point of interest in this case is that despite the intensity and duration of the blood infection there was no important leukocytosis in the blood. The fact that the bacteria crossed the kidney barrier was demonstrated by the appearance of albumin cylinders and leucocytes in the urine.

W A R A

Cubitt O M: Fibrinolytic activity in blood clotting. *Am J Obst Gynec* 1944 48: 555

When an incompatible blood specimen is placed together in a test tube a new and morbid condition is formed. It is assumed that a similar condition would occur in the body upon the passage of agglutinogen from the fetus to the mother's blood stream. A viscous fibrin state of the blood would account for all of the symptoms and pathologic changes of eclampsia. Such a change produces a congested and a decrease in the rate of protein and carbohydrate metabolism.

Experiments on the clotting of blood in cases of normal and abnormal pregnancy also tend to demonstrate that the agglutination may be at fault in true eclampsia but not in puerperal toxemia or normal pregnancy.

There is a group of toxemia with a low blood viscosity compatible blood grouping and apparently the same blood findings as true eclampsia. These cases may be more suggestive of preeclampsia in fact in some of them the maternal blood is said to be polyuric before and after delivery. The cases are small or large amount of albumin may or may not be present before the onset of convulsions. After the onset of convulsions the albumin in the urine increases considerably with each successive convulsion. Clinically these cases are difficult to differentiate from cases of true eclampsia unless the viscosity and the blood type between the mother and child or the husband are ascertained. They are probably cases of nephritic toxemia.

In fifteen clinically diagnosed cases of eclampsia or pre-eclampsia the blood grouping of mother and child was incompatible. In five cases of pregnancy toxemia with convulsions and in eighty-three cases of normal pregnancy the blood grouping of the mother and her child was compatible.

The blood group of the offspring is determined by the laws of heredity. Incompatibility between the maternal and fetal blood groups occurs only in limited blood group unions of parents. In the cases of normal pregnancy examined the blood grouping was such as to exclude the possibility of intraglutination between the maternal and fetal blood.

In the majority of clinically diagnosed cases of eclampsia the maternal and fetal blood grouping was incompatible. High blood viscosity was found in eclampsia with incompatible maternal and fetal blood groupings and compatible maternal and fetal blood groupings. The high viscosity of blood in agglutination is probably the passage of incompatible blood into the stream of the mother.

Wendey J C: The Treatment of Pregnancy with an Analysis of 155 Cases of Eclampsia. *Am J Obst Gynec* 1944 48: 512

The author states that the toxemia of pregnancy is still a form 15 to 20 percent of the maternal mortality in Australia are being seen.

Eclampsia is defined on the basis of 15 cases observed at the Royal Hospital for Women in a period of seven and a half years. One hundred and four of the women were primiparae and fifty-four were multiparae. The treatment was that etherized by its conservative consisting usually in minutes to stimulate elimination of the amniotic fluid morphine. When the convulsions persisted veratrine was used. Seventy-two patients were given one or more doses of the drug in thirteen cases the veratrine was not preceded by morphine. In the author's opinion veratrine should be used when the blood pressure is raised and the pulse rate is rapid. Thus during the first six to twelve hours when attempts are being made to promote evacuation veratrine arrests the convulsions by causing a fall in the blood pressure and slowing the pulse. A pulse rate of 100 or 110 is dangerous. The dose of veratrine is 0.50 mgm followed by 0.4 mgm and then 0.20 to 0.30 mgm repeated according to requirements as indicated by the blood pressure and pulse. A gradual antagone in the use of the drug; the variation in the response of the blood pressure to pulse in different persons.

The author summarizes his conclusions as follows:  
 1. The vomiting of pregnancy is best treated on the assumption that it is due to a disturbance of carbohydrate metabolism.

2. Albuminuria of pregnancy arises in response to extreme depletion of potassium. Therefore to a chronic nephritis is the chief cause of eclampsia. Treatment of the albuminuria of pregnancy is before delivery a combination of a diuretic and a diuretic in the incidence of eclampsia.

3. In a large number of cases of eclampsia the maternal blood is found to be incompatible.

4. The statistics reviewed indicate that in the cases of eclampsia in which the condition

begin before labor are usually at an earlier period of pregnancy than those in which the convulsions begin during or after labor (2) that the infantile mortality is greater in the cases in which the convulsions begin before labor (3) that prematurity is the chief cause of the high infantile mortality in eclampsia (4) that the blood pressure is raised in practically all cases of eclampsia and exceptionally high pressures are found in cases with a pre-existing chronic nephritis and (5) that the low mortality rate at the Royal Hospital for Women is due to the fact that a more or less routine method of treatment is used and obstetrical interference is minimal

ROLAND S. CARMICHAEL, M.D.

### LABOR AND ITS COMPLICATIONS

Davis A. B. Extraperitoneal Cesarean Section (Gastro Elytrotony) in Presumably Infected and Mismanaged Cases of Prolonged Labor  
1 J Obst & G 29 3 133

The sooner it is generally realized by the laity and the members of the medical profession that reproduction is a potentially pathological process and in 90 per cent of the cases an actually pathological process the sooner childbirth will be removed from the position it now holds in America as next to tuberculosis the cause of the greatest number of deaths.

Every pregnant woman should be given proper obstetrical care and instruction soon after conception and throughout gestation labor and the puerperium until everything possible has been done to restore her to her normal activities of life in good condition. Ninety per cent of pregnant women should be under careful observation. Except for a few simple precautions and instructions the should be left alone as long as they are progressing favorably but it should always be borne in mind that some from this large class may change gradually or abruptly over into the abnormal class.

Emergency obstetrical cases should disappear. These increase the morbidity and mortality of obstetrical records. So long as they occur the well equipped maternity hospital should receive them. With proper attention some of the seemingly hopeless cases will recover. There should be some way of checking up the activities of the doctor whose results are reported poor. Such a one should be encouraged to do his energies along less dangerous lines.

We can often see more looking backward but we will accomplish more and obtain better results by looking ahead. The public should be taught to be more critical of obstetrical results and not to accept injuries to the mother and child or the death of the mother both as unavoidable. Extraperitoneal cesarean section will fit in as a high that without it would be lost. Of the twenty cases reported by the author the classical cesarean section would have saved but few.

The twenty-eight cases reported were septic to a greater or lesser degree. In all there was a high temperature after operation. In no case was it possible

to secure primary union of the abdominal wound. Two showed only an oily discharge from two or three stitch holes which lasted for a day or two. In twenty-one cases part or the entire length of the wound separated down to the aponeurosis. In four cases the wound broke down to its entire depth with considerable sloughing. Two patients died early before the repair process progressed very far. The wound healed readily in all cases except two or three in which there was mild tenderness down the inner part of the right thigh suggesting a slight phlebitis the infection remained local. There was no evidence that the uterus was infected or that its wound failed to unite by primary union. In a few cases there must have been a very localized peritonitis. With the exception of one case there was never any suggestion that the bladder was injured or became infected later. In one case with severe sloughing there was a vesical fistula for a short time but this closed spontaneously.

Notwithstanding the previous condition of the patients and the fact that they were subjected to a long and difficult operation their early postoperative condition was remarkably good. Vomiting was never distressing and abdominal distention was almost entirely absent.

One of the principal points of interest in these cases was that the patients included sixteen primiparae, one para ii, one para iii, one para iv, one para v, one para vi, two para vii and one para viii. The ages ranged from 17 to 42 years. Twelve of these patients were entered in the care of the Lying in Hospital. The remaining sixteen had been under the care of physicians elsewhere for an unknown number of hours. Of the two mothers who died one was a para viii 42 years of age who had been under the care of an outside physician and a midwife. Three of her children are living. Her first child was stillborn and delivered with instruments. The others were also delivered with difficulty. The second was a small child, the third a large child and the fourth a child of medium size. The patient had had also three abortions in the third month of pregnancy. The child born by the labor under consideration weighed 460 gm and lived. The mother died on the second day from general peritonitis. In the peritoneal cavity there was serosanguineous fluid which on culture showed hemolytic streptococci. This woman had a contracted pelvis and reported that all of the living children had been injured by the stretching of the brachial plexus.

The other patient who died was a para i 27 years old who had had outside medical attendance for an unknown number of hours before her admission to the hospital. A forceps delivery had been attempted. The patient gave a history of pneumonia three weeks before labor. Her child which weighed 2020 gm survived. The patient was in poor condition on her admission to the hospital and it was the author's impression that the cause of her death was pneumonia plus labor rather than the reverse. No culture was taken in this case.

In all of the twenty-eight cases reported the fetal heart was heard just before operation was begun. The contractions were still present. In these cases there was marked tonic contraction of the uterus and fetal distress was indicated by the escape of meconium and a varying fetal heart beat. One of the stillborn infants was the child of a girl of 17 years who had been under the care of an outside physician and a midwife. It had hydrocephalus and spinal fluid and presented the face.

**Four babies:** One child died after about a half hour and another on the nineteenth day from very extensive gangrenous. The mother of the latter showed a surgical Wassermann reaction. The third child which weighed 480 gm. died in the day of birth. An autopsy related to a cerebral abscess. The patient had been laboring a long while prior to her admission to the hospital. Later to operate on the fetal heart beat ran from 140 to 180. In the case of the fourth child labor had been in progress

for three and a half days under outside care. The child weighed 3,400 gm. It died six hours after delivery.

Six of the women have come under the authors' care in a subsequent pregnancy. One in the third month was assured that she was pregnant declared that her husband demanded an abortion. Nothing further has been learned regarding her. The five others continued to term. One had an almost precipitate spontaneous delivery of a very small child. The four others were delivered by classical cesarean section. The site of the former extraperitoneal operation was carefully examined in each case manually with one hand through the cesarean opening in the uterus. It was surprising to find how well the uterine wall had closed and how few adhesions there were in the neighborhood. In no instance was there a weakening or hernia at the site of the previous opening in the abdominal wall.

EDWARD L. CURTIS, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Deucher G W. Changes in the Adrenal Cortex in Peritonitis and Sepsis (Ver end re gen der Nieren in Peritonitis und Sepsis) *Arch f kl Ch* 1923 cxx 378

In toxic and bacterial injuries of the body severe changes frequently occur in the adrenal cortex. The amount of lipid is diminished in isolated layers and the cholesterol content is reduced proportionately. The author first examined ten normal adrenal glands then studied the deviations from the normal in fifty cases of peritonitis and sepsis and finally controlled his findings by experiments on guinea pigs.

In the normal suprarenal cortex which is always abundantly supplied with fat the lipid is found in the parenchymatous cells of the glomerular and reticular tissue and mainly in small droplets. Coarser droplets are found mixed in the fascicular tissue. In the sections the fatty bodies crystallize abundantly. In peritonitis and sepsis a local appearance of the lipid occurs at first in the glomerular and reticular tissue there is also a decrease in the size of the droplets with simultaneous loss of the crystallizing power of the lipoids. In addition hollow drop formation vacuolization and honeycombed cellular degeneration are found. Involvement of the vascular supply is shown by edema and hyperemia. Extravasation and infiltration are rare. These changes mentioned are more rapid and more marked in peritonitis than in sepsis. *KRETER (Z)*

Sweet J E. Some Theoretical Aspects of the Problem of Anuria. *Am Jc M J* 1924 xxv 45

In the author's opinion there is a tendency to declass laboratory statisticians who forget the patient. Sweet divides anuria into three types: (1) the pre-renal due to disturbance of some mechanism before the kidney is reached; (2) the renal due to a condition with the kidney itself; and (3) the post-renal due to a disturbance of the excretory system of the kidney. With regard to pre-renal anuria produced for instance by hysteria and the use of ureteral catheters he states that the pituitary gland is doubtless the central control station of water balance. Another factor with considerable influence on kidney function is diet.

One type of renal anuria is that due to bichloride of mercury poisoning.

Post-renal anurias include the postoperative anurias and those due to calculus.

The chief problem in cases of anuria is the nature of the lethal factor. The author states that it is not water salts or urea but an unknown toxic substance. The sequel of anuria is the presence of

urinary constituents in the blood. The anuria is essential or specific when normal urine is excreted. The toxin which kills accumulates in the blood. *BENJAMIN T. ROLLER, M.D.*

Scholl A J and Judd E S. A Review of Cases of Hydronephrosis and Pyonephrosis. *Surg Clin N Am* 1924 iv 425

Scholl and Judd report a series of cases of hydronephrosis and pyonephrosis from the Mayo Clinic. There were 503 cases of hydronephrosis. In 415 the kidney was removed and in thirty-nine a plastic operation was performed. Simple extraperitoneal lumbar nephrectomy was performed in 436 cases; subcapsular nephrectomy in thirty and transperitoneal nephrectomy in twenty-one. There were no operative deaths in either the subcapsular or the transperitoneal operations. In sixteen cases a complete nephroureterectomy was performed, all of the patients recovered. In most cases the nephroureterectomy was carried out through two incisions: a posterolateral incision to free the kidney and an anterior low rectus incision to free the lower ureter.

The plastic operations on the renal pelvis were as a rule unsatisfactory. In eleven of the thirty-nine cases a secondary nephrectomy was necessary.

Five (1 per cent) of the patients who had had a primary nephrectomy died following operation. Complete postoperative data were obtainable in 403 of the remaining cases. Three hundred and eighty-four (95 per cent) of the patients are still living; thirty-seven of them from ten to fifteen years; 118 from five to ten years; 149 from two to five years; and eighty-one year after the operation. In seven of the nineteen fatal cases death occurred during the first year; in eight from two to five years after the operation and in four from seven to ten years after the operation. Fourteen of the 384 patients still living have an infection in the remaining kidney; thirty-one complain of renal pain and discomfort. Only three have had another operation: one for the removal of a ureteral stone and two for the removal of a renal stone. All of the operations were performed on the opposite side. The remaining 309 patients whose data are complete are in normal health.

Four hundred and seventy-four patients with pyonephrosis were operated on. In 471 cases the kidney was removed; in three nephrotomy was performed and drainage established. Lumbar extraperitoneal nephrectomy was done in 468 cases. In 354 complete nephrectomy and in 114 subcapsular nephrectomy was performed. Complete nephroureterectomy was done in only three cases. In one case it was necessary to remove the remaining portion of the ureter at a later operation. Opening the peritoneum for lumbar nephrectomy is a more ex-

vious procedure in the presence of widespread infection than in cases of simple hydronephrosis.

Adhesions from previous operations and peritoneal infection are common in cases of pyonephrosis. The peritoneal cavity was unavoidably opened in twenty-three cases in two fatal peritonitis resulted on the tenth and twelfth day after operation respectively. A subcapsular nephrectomy was performed in 114 cases. Pyonephrotic infection was common and as the capsule was often thickened and adherent to the surrounding structures it was impossible to find the extracapsular line of cleavage. The kidney was generally located in the center of the mass of protective adhesions and in most cases enucleated readily from its fibrous capsule. One of the 114 patients died following the operation.

A transperitoneal operation was performed in six cases. Twelve (25 per cent) of the patients with primary nephrectomy for pyonephrosis died following operation.

Complete postoperative data were obtainable for 388 cases of nephrectomy and three cases of nephrotomy. Two of the patients treated by nephrotomy and drainage are still alive. One is in good general health but the other's opposite kidney is also diseased and this prevents further operative procedures on the pyonephrotic kidney. In both cases the wounds are draining. Nephrotomy was performed on the third patient as an emergency procedure the opposite kidney being extensively diseased. Death occurred soon after the operation.

Three hundred and thirty-six (86.6 per cent) of 388 nephrectomized patients are alive. One hundred and thirty-three are living from five to twelve years, 163 from ten to five years and forty one year after the operation. Five patients have persisting sinuses which have been draining from two to five years and one patient has a hernia in the operative wound. Thirty-four patients have had attacks of pain over the opposite kidney. Nineteen have infection of the kidney and bladder and eighteen complain of frequency and dysuria. In two cases stones that were left at operation and had ruptured through the kidney were removed from the perineal tissues. In one case a ureteral stone which was left in place caused a painful persisting fistula. Removal of this stone was followed by a good result. In four cases an abscess formed in the incision and required drainage and in one case it was necessary to remove the renal capsule which had been left following subcapsular nephrectomy. The sinus healed after the second operation.

Hinman F. and Morris N. D. M. An Experimental Study of the Circulatory Changes in Hydronephrosis. A Preliminary Report Relating to the Unilateral Kidney. Issued in the *Rebel* bit *J. Urol.* 924: 435.

In one series of rabbits the left ureter was exposed through the lumbar route and divided as far down as possible from the renal pelvis. In another series the left ureter was divided just above the bladder

through a mesial transperitoneal incision. The hydronephrotic changes in the two series were similar except that the higher obstruction favored a more rapid development.

With complete ureteral obstruction early pressure is transmitted from the distending pelvis to the calyces surrounding the interlobar vessels which are also subjected to increasing pressure. At first the interlobar veins are chiefly affected and there is resulting hyperemia in the cortex cortices.

The intrapelvic pressure gradually forces back the ampulla of the solitary pyramid and makes the arterial and venae rectae tortuous. As the medulla toward the renal poles is stretched the straight vessels are elongated and laterally compressed. The pyramid then becomes compressed on its base against the renal capsule thereby affecting the cortical parenchyma since the vessels which run primarily in the same axis as the direction of pressure become shortened and tortuous. The interlobular vessels in the cortex are then affected. The cortex cortex first becomes thinned and then obliterated by compression against the capsule. The interlobular vessels show marked tortuosity with obliteration of their peripheral glomeruli and a temporary increase in the size of their proximal glomeruli.

The interlobar trunks are then displaced and to gether with the arcuate vessels and their branches are stretched over a constantly dilating sac. As a result of pressure and stretching there is partial anoxia of the cortical parenchyma which tends to favor relaxation. The larger interlobar and arcuate vessel become more and more attenuated and lengthened whereas their finer ramifications (interlobular branches) pass from a stage of foreshortening to complete obliteration.

The kidney thus becomes transformed into a thin-walled sac over and around which course attenuated and greatly lengthened interlobar and arcuate trunks, sole remnants of the previous renal architecture. Lo. N. W. H. M. D.

F. P. E. and Ambard L. Resection of the Nerve of the Kidney for Nephralgia and Small Hydronephroses. *J. Urol.* 924: 337.

In the present state of our knowledge we must assume that pain is transmitted only by the cerebrospinal nerves. The kidney and its pelvis are supplied by the renal plexus which accompanies the large vessel of the pedicle penetrating the renal sinus with them. There are also fine nerve filaments entering with the arteries which penetrate the fatty fibrous capsule. (2) an artery which enters between the kidney and adrenal gland (3) accessory (polar) vessels. The nerves follow closely the course of the blood vessels and form a complex around them. The filament can be traced up to the point where they enter the parenchyma and follow the blood vessels to their finest ramifications. The nerves within the kidney are usually nonmedullated but in the pelvis and calyces the fiber are frequently medullated. The ganglionic cells of the plexus are

of the sympathetic type and there is no doubt that renal pain comes from the sympathetic fibers.

Interesting results may be obtained from resection of the nerves in painful nephritides, small hydro-nephroses and nephralgias without a well-established etiology. The technique is the following:

All of the fat around the kidney and ureter is removed with care to preserve the perireteral vessels. The renal pedicle is then exposed and the nerve trunks are isolated and severed with the aid of a head light and a sterilizable magnifying glass. The posterior aspect of the pedicle is treated in the same way. The artery and vein are completely stripped of all surrounding nerve filaments. Injury of the renal vein requires lateral suture. The operation is completed by nephropexy.

Papin has performed this operation six times. Two cases were not benefited. The postoperative pain was more severe than that following ordinary kidney operations even nephrectomy. Polyuria or ofuria did not occur. Decapsulation and nephropexy were done in all cases. The method is applicable only to hydronephrosis without obstruction.

LOUIS NEWBERG, M.D.

**Persson, M. Two Cases of Early Tuberculosis of the Kidney. *U. S. J.* 1941; 55.**

According to the Ekehorn theory advanced in 1903 the surgical tuberculosis of the kidney which begins as a rule within a papilla penetrates to the renal pelvis through a fistula and finally infects the entire renal pelvis as is of unocular hematogenous origin. Very few cases reported in the literature were seen at a sufficiently early stage to afford any positive support for this theory but the author reports two such cases.

The first case was that of a man 44 years of age who had been treated in a sanatorium during the spring of 1922. At that time the urine contained no albumin. At the end of October 1922 complaint was made of difficulty in urination. When the patient was admitted to the hospital in December 1922 the urine from the left ureter showed pus cells and tubercle bacilli but that from the right ureter was normal. On December 9 a nephrectomy was done on the left side. Sections of the specimen showed in one of the uppermost papillae a grayish yellow rounded area about the size of a pea and a very small ulceration on the surface of the adjacent papilla. On microscopic examination the rounded area was found to be a tuberculous cavity opening into the kidney pelvis through a microscopic fistula. The ulcerated area was a superficial tuberculous ulceration. In the upper portion of the pelvic mucous membrane there were microscopic early tubercles.

The second case was that of a man aged 23 years. On May 23, 1924 the right epididymis was resected because of tuberculosis. Soon thereafter the patient complained of urinary frequency. Cystoscopic examination revealed a reddened area around the orifice of the left ureter. The urine contained no demon-

strable tubercle bacilli but showed a moderate number of white and red blood cells in the normal proportions in which they are present in the blood. On July 3, 1923 a guinea pig test of the urine from the left kidney proved positive for tuberculosis. Tests of the urine from the right kidney were negative.

The patient was admitted to the hospital on August 3. At that time there were no urinary complaints. The urine from both kidneys was clear but showed a positive reaction to the Heller test. No tubercle bacilli were demonstrable but in the sediment of the urine from the left kidney a moderate number of white cells were found. On August 8, 1923, nephrectomy on the left side was performed. In one papilla in the upper pole of the kidney was a caseous cavity the size of a pea from which a fine fistula opened out into a calyx. The rest of the papillary apices were macroscopically normal. The upper portion of the pelvic mucous membrane showed solitary fresh subepithelial tubercles with giant cells otherwise the mucous membrane was normal.

**Bumpus, H. C., Jr. The Treatment of Pylonephritis with Indwelling Ureteral Catheters. Report of Two Cases. *J. U. S.* 1941; 55.**

Experimental work has shown that pyelonephritis is usually of focal origin and that the colon bacillus appears as a secondary invader which often replaces the original infecting organism. The removal of foci has been restricted because of failure to obtain brilliant results either following removal in cases of irreparable pathological changes or after partial removal. It is not generally appreciated that good results can be obtained only by the complete eradication of foci. It is a common experience to examine patients who have had abscessed teeth removed but who still retain infected tonsils. There fore all patients with pyelonephritis should be advised to have both abscessed and pulpless teeth and infected tonsils removed before local treatment is undertaken.

In cases that have become chronic local treatment is based on the type of the disease. As a result of inflammatory changes dilatation occurs first in the minor calices then in the pelvis and later in the ureters. This according to its degree either impairs or completely prevents normal peristalsis and results in delayed and faulty drainage of the kidney. The inflammatory exudate and infected urine tend to be retained. In the treatment an attempt is made to favor drainage by inserting two ureteral catheters up the ureter to the renal pelvis. The larger catheter the more easily is the treatment carried on. After both catheters have been inserted one is withdrawn to a point 2 or 3 cm. lower in the pelvis. The other is then attached to a reservoir containing lavage solution and placed several feet above the patient so that there will be sufficient pressure to produce a satisfactory flow. The solution runs into the renal pelvis at a rate that will not cause pelvic

listention and escapes through a second catheter into a receptacle in the bed. Lavage is continued for several hours each day and several liters of fluid are run through. The catheters may be left in place as long as they drain freely. If there is a severe cystitis similar treatment is given the bladder the results are equally gratifying. In one particularly severe obstinate case this type of continuous irrigation was carried on for about two months with satisfactory ultimate results.

**Farman F: Some Types of Chronic Recurrent Pyelitis and Their Treatment. C 1 for a & B 1 J of 1924 xxi 203**

Farman states that women are more subject to pyelitis than men and that congestion of the kidney rather than the type of the invading bacteria is the factor of chief importance in the production of renal infection. He claims that about 90 per cent of renal infections are caused by the colon bacillus and 5 per cent by one of the pyogenic cocci.

In the female renal infection may appear at any age but there are certain periods of life in which the recurrent types are more apt to become activated. For instance pyelitis in young adult women occurs more commonly after marriage than before. Women near the menopause are particularly subject to urinary disturbances. Congestion and infection of the kidney may result also from the trauma of repeated childbirth and the strain of heavy household work. Elderly women are prone to the chronic recurrent types of infection.

Experimental and clinical tests have shown that the constant elimination of bacteria and toxic material brought to the kidney by the blood stream from distant sources of infection (teeth tonsils sinuses) finally results in irritation destruction and infection of the kidney itself.

The author reports nothing new in regard to the treatment of pyelitis.

A diet which puts the kidney at rest reduces the acidity of the body and keeps the urine neutral or alkaline is desirable such as the so-called basic nephritic diet advocated by Sansum. In general the basic nephritic diet consists chiefly of vegetables fruits and sugars. Meats eggs and cereals are excluded. All foods which are essentially basic or neutral may be allowed. Orange juice is very potent in rendering the urine rapidly alkaline. One glass should be taken at each meal. Contrary to popular impression orange and lemon juice are not acid but basic in nature. The author says that he has found the diet described of the greatest help in relieving the distressing urinary symptoms of an acute attack of pyelitis. With exceptions it should be continued until the inflammatory lesions of the kidney and pelvis have healed.

The drugs most commonly employed are the citrates acetates and carbonates. A combination of sodium bicarbonate and calcium carbonate in large doses is of value. It is well to ascertain the degree of alkalinity of the urine frequently by deter-

mining the hydrogen ion concentration or by the use of the ordinary litmus test.

Following subsidence of the acute symptoms of pyelitis the administration of alkalies may be discontinued and hexamethylenamin given. Hexamethylenamin should not be given for acute urinary symptoms.

A pyelitis which does not subside readily under medical management or which tends to recur should be treated surgically i.e. by direct kidney and bladder treatment and investigation and correction of the accessory causes of infection by pelvic lavage repeated once or twice per week depending upon the clinical improvement and the findings of urinalysis.

In the routine examination of women complaining of urinary symptoms the author always determines the presence or absence of residual urine. Some times it is necessary to examine for residual urine several times as nervousness or sphincter spasm may prevent complete evacuation of the bladder while in the early stages of vesical relaxation it may be possible to empty the bladder completely by extra voluntary effort. In this type of case much can be done to prevent retention of urine and ascending infection.

Renal infection occurring secondary to gall bladder appendicular or pelvic disease or tooth tonsil or sinus infection will spontaneously disappear following surgical removal of the foci.

Before dismissing a case of pyelitis Farman instructs the patient in bladder hygiene. Overexertion fatigue chilling and exposure to inclement weather should be avoided. In many of Farman's cases the condition began after ocean bathing with sudden chilling of the body surface. A frequent cause of urinary disturbance is voluntary suppression of the desire to urinate. Women especially are prone to accustom themselves to over-distention of the bladder.

LOUIS GAOSS M.D.

**Negley J C: Kidney and Ureteral Calculi. C 1 for a & West Med 1924 xxii 227**

This article is based on twenty cases of stone in the ureter thirty seven cases of stone in the kidney one case of stone in the right kidney and right ureter and one case of stone in the left kidney and left ureter. There were two cases of stone in both kidneys.

Ureteral stone was more frequent on the left than the right side and kidney stone more frequent on the right than the left side. In most of the cases the symptoms had been present for more than a year.

In the author's opinion operation is the method of choice in all cases showing derangement of the kidney function. The patients whose cases are reviewed averaged only twenty four days in the hospital a relatively short time. Manipulations for non-operative removal of stone if too often repeated do more harm than good but in every case at least three attempts should be made to remove the stone by non-operative procedures before resort is had to operation.

LOUIS GAOSS M.D.

Kretschmer H. L. Kidney and Ureteral Stone Surgery *California & West Med* 1924 22: 143

Renal infections are relatively common in women and stone is not unusual. Kidney stone may occur in association with other pathology causing symptoms overshadowing those due to the stone. Kretschmer cites cases in which renal stone was present with carcinoma of the colon, prostatic hypertrophy, renal tuberculosis and other conditions. He calls attention to the great value of a roentgen ray examination in all cases in which renal stone is suspected. Aid is given also by cystoscopy combined with catheterization of the ureters and the use of the shadowgraph catheter.

The operations of pyelotomy and nephrolithotomy and their indications are discussed. As complications of nephrotomy are mentioned urinary and suppurative sinuses.

Nephrectomy is less frequently done as a primary operation today than formerly. Persistent fistula, recurrence of stone, persistent infection or second ary hemorrhage after nephrotomy or pyelotomy may necessitate removal of the kidney.

J. S. EISENSTADT, M.D.

McClellan R. H. A Report of Two Carcinomata of the Kidney with Origin in Papilloma of the Renal Pelvis *J. U. I.* 9: 421 461

In the first case the only outstanding sign was hæmaturia. Roentgenography failed to help in the diagnosis. Cystoscopy showed which side was involved but not the nature of the involvement. The phthalein output was very slightly subnormal although there was total suppression of excretion on the involved side and the kidneys were arteriosclerotic.

At operation most of the neoplasm was found in the dilated pelvis. The picture was that of a so-called benign papilloma of the pelvis except for an occasional mitotic figure in the lining cells and one small island like mass of epithelium in the stroma of one papilloma. No definite break in the basement membrane was demonstrable but at some point the pelvic growth had broken this membrane and invaded the renal parenchyma diffusely. The metastases were extensive.

In the second case there was a kidney tumor mass with pain and hæmaturia. Roentgenography again failed to show the position and type of the kidney involvement. In spite of considerable kidney involvement the phthalein excretion was normal. Operation revealed a polycystic growth with a tendency toward papilloma formation. Six months after the operation there was no recurrence. The growth probably originated in the kidney pelvis as a so-called benign papilloma. LOUIS NEUWELT, M.D.

Gyft G. and Roussier J. The Forced Ureter (L'uretér forcé) *J. du Méd. I.* 9: 422 97

By the term forced ureter the authors mean the ureter which no longer offers any resistance to

reflux of the contents of the bladder to the kidney pelvis. It is the condition which others have designated as permanent dilatation of the inferior orifice of the ureter. It was described in detail by Legueu and Papin in 1914 but because of the war little was written about it until within the past few years.

Legueu and Papin believed that the dilatation might have a congenital origin but many acquired cases have been described. Heitz Boyer recently reported a case due to an old infection.

Gayet and Roussier report a series of fourteen cases. The first two observed were very similar. In each of these the condition could be traced back to intense cystitis caused by irritating injections into the bladder.

The fact that Gayet and Roussier found fourteen cases in their clinical service within a short period of time shows that permanent dilatation of the vesical urethral orifice is common.

In some of the fourteen cases the condition appeared to be congenital while in others it was acquired. Generally there is a history of crises of painful cystitis with pollakiuria, sometimes of incontinence and always of spasmodic contractions of the vesicle muscle tending to force the ureteral and urethral orifices. Injections of caustic substances into the bladder may cause the condition and prove its mechanical pathogenesis. The dilatation was observed also in cases of diverticula and lithiasis, pyelonephritis and stricture of the urethra.

The diagnosis which is easy is based upon the cystoscopic and cystoradiographic findings and the exchange of colored fluids between the bladder and kidney.

In unilateral cases which are usually congenital the best treatment appears to be nephrectomy if the gaping ureter has caused severe kidney infection. Nephrostomy is insufficient and leads to fistula. In bilateral cases or in unilateral cases in which the other kidney is absent or functionally insufficient fagage of the bladder and renal pelvis by simple vesical injections is beneficial but is only palliative. Such treatment must be given with great care not to cause infection. W. A. BRENNAN

Smith G. K. Lesions of the Ureter with Special Reference to Obstruction and Infection. A Factor in the Development of Certain Forms of Nephropathology *S. & G. C. Obs.* 1924 x vi 509

Obstruction of the ureter with subsequent urinary stasis and renal infection is due to (1) stricture of the ureter, (2) small caliber of the ureters (congenital), (3) ureteral kink associated with stricture, (4) ureteritis secondary to seminal vesical disease or disease of the female adnexa. It is a common cause of abdominal or pelvic pain and dysuria especially in women.

The author discusses the well known effect of unrelieved obstruction and urges dilatation of the obstructed areas. The latter procedure is a prophylactic measure and the best means of preventing the



development of a surgical condition of the kidney. The author's case reports show the frequency of hematuria and hemuria. Stone, urinary tuberculosis and other conditions that may cause obstruction of the ureter are not discussed.

MALCOLM MILLER, M.D.

### BLADDER URETHRA AND PENIS

Sicaud and Forestie. Roentgenography of the Urethra with Lipiodol (A propos de l'emploi de l'huile iodée dans l'exploration radiologique de l'urètre). *Bull. Mém. Soc. Méd. d'Alger* 1934, 35, 21, 315.

The authors report the work of Legrand on the use of lipiodol in roentgenography of the urethra. Ten cubic centimeter of 10% lipiodol are injected gently with a glass syringe under slight pressure and the roentgenogram then made at once. For the anteroposterior view the patient is placed in dorsal decubitus and the rays are centered below the pubis in the median line. The roentgenogram is clear but presents a large shadow due to the urethral bulbous dilatation. For the lateral view the patient is slightly inclined on the left side with the left thigh strongly flexed on the hip and the right thigh slightly hyperextended. The X-ray incidence is oblique the natural position being in front of the anterior surface of Scarpa's triangle on the right side. The tube is inclined 45 degrees. The entire urethral canal is seen clearly. The iodized oil passes easily into the bladder.

The procedure is simple and inoffensive. It is of value as a diagnostic measure as it shows the caliber of the urethra and the level of the stricture.

WALTER C. BURKE, M.D.

### GENITAL ORGANS

Caulk, J. R. The Value of the Cautery Punch Operation for Contracture of the Vesical Neck. *Reg. Am. M. & S. J.* 1934, 700.

The author claims that the cautery punch operation is as capable of producing a cure as any of the open methods and subjects the patient to less surgical hazard and economic loss.

Caulk considers all of the lesser obstructions as contractures and divides them into those of the bar type and those of the collar type. The latter he further subdivides into the following types:

1. Slight annular thickening around the internal orifice which prevents flushing of the orifice and bladder wall.
2. Somewhat more pronounced annular thickening which frequently forms shallow clefts particularly in the upper segment.
3. Much more pronounced intra-vesical bulging associated with the formation of clefts and lobules. This is a borderline condition between minor and major surgery which requires the most careful cystoscopic differentiation.
4. Dense solid masses usually termed true obstructions. The type which has proved difficult to

overcome and apt to recur. The associated spasticity and tenosus may lead to an error in the diagnosis. On rectal and cystoscopic examination many such contractions seem to require open surgery. The thickening is due chiefly to edema and inflammatory infiltration upon the sclerotic background. Under drainage rest and relief of the tension the entire configuration becomes rapidly transformed.

Caulk has operated upon a number of patients with the different types of strictures who had been advised that local treatment would be sufficient or if the obstruction was marked that open operation was the only possible remedy. Two patients operated on with the cautery punch came from important clinics with suprapubic openings formed preparatory to prosthetic enucleation. Both were in such a precarious condition that the second stage had not been carried out.

In the series of 150 cases reviewed a hypospadias was found in 40 per cent, a small collar obstruction in 33 per cent, a tightly contracted neck in 15 per cent, lateral lobule formation in 4 per cent and cancer in 7 per cent. Therefore the obstruction was of the collar type in almost 60 per cent. In the last few years Caulk has found that 30 per cent of obstructions fall in this class and are amenable to minor procedures.

In the examination the size of the prostate was determined by rectal examination and by cystoscopic examination of the orifice. The majority of the patients were between 60 and 75 years of age but twenty-three were under 50 years and eight were between 30 and 40 years. All were extremely poor surgical risks and the majority were suffering from pyelonephritis and rather severe uremia. Caulk is confident that if major surgery had been done in the cases the operative mortality would have been high. The cautery punch operation was followed by no mortality and no reaction. When it was completed the patient was allowed to get up and dress. A retention catheter was placed when there was a large quantity of residual urine requiring drainage and when there was marked spasticity with retention of urine.

The cautery punch operation is remarkably painless. In cases operated upon with the alternating current there was no hemorrhage. As a rule there was only a slight staining of the urine or a slight beginning or termination of bleeding. In the majority of the cases this ceased entirely in two days but a few patients had terminal staining for from seven to fourteen days and a few others for as long as four weeks. In no case was there extensive sloughing after the operation and in no instance was the procedure followed by the slightest incontinence. An operation with reaction was rare. In only twelve cases was there a rise in the temperature and in eight of these there had been chills and fever from pyelonephritis. Epididymitis occurred in 8 per cent of the cases but was acute in only two instances.

In 60 1/2 per cent of the cases the operation was followed by improvement in the urinary stream.

within a week and in the remainder in from two to eight weeks. However several of the patients with the best results had considerable difficulty in urination frequency and irritation for as long as seven or eight weeks. No instrumentation of the urethra was done for five weeks after the operation. The average patient was given urinary antiseptics watched carefully and told to drink water freely. In cases of irritability the usual sedatives and heat were employed. If the urine was dirty and the irritability pronounced a mild injection of argyrol or collene was given through the urethra with a urethral syringe.

In the cases of bar obstruction the average frequency of urination at night was four before operation and one after operation. Before the operation all but eleven of the patients were obliged to get up at night. Since the operation 53 per cent have not been obliged to urinate at night whereas before the operation their average frequency was three.

In the cases of collar obstructions and those with lobule the average frequency of urination at night was four before operation and one after operation. Sixty per cent of the patients were entirely cured of night urination.

In the cases of severe contractures the frequency of night urination was six before operation and one after operation. Before the operation all of the patients were obliged to get up at night whereas after operation 40 per cent were entirely cured. There were two recurrences one within six months and the other within a year. About 60 per cent of the patients have remained entirely free of symptoms for from one to four years.

The residual urine before and after operation as follows: Bar obstruction before 4 oz after 1 oz. Collar obstructions before 11 oz after 1 oz. Ectopic eight per cent of the two types of cases were entirely cured. Contractures before 5 oz after less than 1 oz. In 28 per cent of these cases there was no residual urine before operation. Of those with residual urine before operation 80 per cent were entirely cured.

In conclusion the author states that the cause of its simplicity and its freedom from serious complica-

tions the cautery punch operation should occupy a more important place in urology and that if urologists would study the various types of vesical orifices more carefully and would use the technique described they would be gratified with the results and the general mortality of prostatic surgery would be greatly reduced. LOUIS GROSS M.D.

# MISCELLANEOUS

Spitzer W M and Hillkowitz P The Cause of Stone in the Urinary Tract *J Urol* 9 4 3  
3 7

The urates phosphates carbonates and ovalates in the urine are in a saturated solution and are kept in solution by the colloid. This colloid state is unstable. There is always a tendency for the solids to fall out of suspension. Other colloids of an opposite electric charge will produce this result. With the removal of the protective colloids the urine becomes supersaturated and precipitation results.

The presence of an organic binder in stone is well known. It consists essentially of irreversible colloids that have been thrown out of suspension and constitute a framework on which the inorganic crystal line structure is built up. The chief characteristics of urinary stones are firmness and concentric stratification with frequently a radial arrangement of the crystals. The crystals usually differ from those found in pure aqueous solution in that they are formed in a colloidal medium. Some albumins especially fibrin when thrown out of colloidal suspension show marked stratification.

The urine containing normally a number of colloid delicately balanced to maintain the solubility of the colloids may be thrown out of suspension by any pathological process—a metabolic disturbance or a change in the urinary passages. Any colloid thrown out of suspension may be the starting point of a stone. Offering a relatively large surface it may by the faculty of adsorption favor incrustation of crystals. In brief any heterogeneous substance any foreign particle even an air bubble in a supersaturated solution may serve as a nucleus of stone formation. LOUIS NEUWELT M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS MUSCLES, TENDONS, ETC.

Sullivan W E, Geist F D and Mueller G G :  
The Epiphyses of the Bones of the Extremities  
at Puberty *J B & J* 15 1924 1 239

The authors study was made on the cadavers of three children from 12 to 13 years of age. Their report is divided into six parts dealing respectively with (1) the general characteristics of the epiphyses (2) the vascularization of the epiphyses (3) the epiphyses as criteria of age (4) multiple ossification centers (5) the relation of the epiphyses to the joints and (6) a description of the illustrative plates.

In agreement with Parsons the epiphyses are divided into three groups:

1. Those appearing at the articular ends of long bones and called pressure epiphyses because they transmit the weight of the body from bone to bone.

2. Those which form knob-like processes or caps over knobs where important muscles are attached e.g. the tubercles of the humerus, the olecranon, the trochanters of the femur and the tibial tuberosity. These are called traction epiphyses.

3. Epiphyses which represent parts of the skeleton which at one time were of functional importance but losing their function became fused with the neighboring bones and appear as separate ossifications only in early life. These are called atavistic epiphyses. Examples are the region of the symphysis pubis and the tuberosity of the ischium which represent the epipubis of amphibians and reptiles and the hypischium of reptiles.

Ossification begins in the center of the cartilage and appears first at the larger end of the bone in the larger cartilaginous mass.

Because of the similarity of the traction epiphyses to sesamoid bones and because of the occurrence of atavistic epiphyses it seems probable that all of the epiphyses were at one time independent skeletal elements.

With regard to vascularization the authors state that it is not clear whether the epiphyses receive their blood through an extension of the vessels from the shaft or through an independent group of vessels. Pathological data support both views.

Practically all textbooks give the time of the appearance and fusion of the epiphyses. Unpublished work by Hannon and Beffel of the University of Wisconsin suggests that a correlation of ossification with sex, stature and weight will indicate age.

In many instances more than one center of ossification is found. The best example is the region of the acetabulum. The suggestion is made that epiphyseal centers are at first multiple and the number is progressively decreased by fusion.

With regard to the relations of the epiphyses to the joint cavities the line of reflection of the synovial membrane has been used as the criterion. Each joint is described with reference to the epiphyseal or diaphyseal reflection of the synovial membrane.

DE WIT, H. LEVI, THAL, M. D.

Klinkfuss G H: A Study of the Growing Power of Periosteal Callus Transplanted to Costal Cartilages *S & Gy & Ob* 1941 9 4 5 615

The author compares the growing power of autotransplants of periosteal callus and solid bone grafted to the costal cartilages. Since at a certain stage periosteal callus is composed of rapidly proliferating osteoblasts on a highly vascularized stroma it was thought that this tissue would generate bone much more rapidly than solid bone which must first be brought to the stage of active growth after transplantation. Periosteal callus was chosen also because solid bone transplants are usually absorbed and replaced by new bone formed by actively growing osteoblasts of the periosteal layer, Haversian canals and endosteum.

The costal cartilage was chosen as the most suitable bed for the graft for the following reasons:

1. As pointed out by Berg and Thalheimer it offers all of the conditions most favorable for bone growth: (a) stress-strain function and a mechanical axis point for the blood supply is identical with that in which embryonic development of bone occurs.

2. The results will be judged more accurately than if the transplant were made to another bone because in the cartilage all new bone formed would probably come from the transplant.

The animals used were large brown Belgian rabbits in the period of active growth.

From these experiments the author draws the following conclusions:

1. Callus grafts grow after transplantation.
2. Solid bone grafts usually die and become absorbed being replaced by new bone tissue resulting from the proliferation of osteoblasts of the periosteum into the medullary and Haversian canals.
3. Callus grafts form new bone more rapidly than solid bone transplants.
4. Callus grafts persist as long as a solid bone graft and become quiescent at about the same time.

F. W. LITER, C. D. THAL, M. D.

Brook B and Lehman F P: The Bone Changes in Recklinghausen's Neurofibromatosis *S & Gy & Ob* 1941 9 4 7 587

Recklinghausen's neurofibromatosis is characterized by multiple pedunculated soft tumors distributed

uted over the entire body with areas of pigmentation. The tumors may be distributed in the skin along the distribution of a cutaneous nerve or along a nerve trunk itself. Associated with this disease there may be changes in the bones. Stahnke has pointed out that the condition has the character of a congenital anomaly in the broadest sense. The bone changes include (1) scoliosis (2) abnormalities of growth and (3) irregularity of outline of the shafts of the long bones including changes which in the X-ray picture suggest subperiosteal bone cysts. Scoliosis is present in practically every case. Excessive growth in length of the long bones is also noted.

According to the authors' experience and according to the reports in the literature there is no other condition with spontaneous excessive growth in length of a single long bone. This growth is usually associated with congenital elephantiasis. Irregularity in the outline of bone varies from very slight irregularity of the periosteal and cortical structure of the bone to large tumors projecting from the surface or embedded as cyst like cavities in the structure of the bone.

The X-ray appearance of these tumors is that of a bone cyst. According to the authors all of these bone changes can be explained on the basis of involvement of the bone by the growth of the tumor tissue which is characteristic of Recklinghausen's disease. With the development of the neurofibroma of a nerve in the perineurium a certain amount of reaction is set up which is followed by bone destruction and regeneration. The amount of cystic formation or bone destruction depends upon the amount of tumor growth. The process may be compared to an osteomyelitis. If the infection destroys the epiphyseal cartilage the bone is abnormally short. In the authors' opinion the scoliosis so generally associated with the disease is explained chiefly by the close association between the vertebrae and the peripheral nerves. It may be due in part also to the asymmetrical growth disturbances in the lower extremities.

In conclusion the authors state that the recognition of the described changes in the bones is of diagnostic importance particularly in cases in which the complete clinical picture heretofore considered classical is not developed.

F. WALTER CARRUTHERS, M.D.

Thomson J. E. M. A Case of Kummel's Disease  
V. B. & S. I. M. J. 1924 1: 178

The author briefly reviews the literature on Kummel's disease and reports a case of his own. The condition is often confused with compression fracture of the vertebral body. Thomson stresses the fact that Kummel's disease comes on after a latent period during which there are no symptoms referable to the back. The symptoms are due to the partial collapse of the affected vertebra caused by a rarefying osteitis due to injury.

The case reported was that of a young farmer. The symptoms were first noted six months after the

injury. The treatment consisted in Hibb's fusion of the affected segment of the spine. A good result was obtained.  
BEVERIDGE H. MOORE, M.D.

Lane J. E. Syphilitic Bursitis. J. Am. M. Ass. 1924 18: 85

The author reports two cases of syphilitic bursitis.

**CASE 1.** The patient was a woman 50 years of age who was admitted to the hospital March 7, 1921, for swelling of knees. Her husband had had syphilis for seven years and during the last four years she had had ulcerations on the throat, arms and legs. Physical examination revealed many signs of syphilis. Each knee presented a tumor over the patella. One tumor was the size of a lemon and the other larger and adherent to the patella. Wassermann tests of the blood and spinal fluid were positive. On March 12, 1921, the skin over the left knee tumor began to slough off, disclosing the contents of the prepatellar bursa. Arspenamine treatment caused slow improvement. Surgical excision of both bursae was done April 9, 1921. The wound in the right knee healed by first intention but that in the left knee required packing.

**CASE 2.** The patient was a man 40 years of age with ulcerations around the right elbow. Two years before he was seen by the author this elbow was injured by a blow. A swelling appeared in a few days, grew rapidly to half the size of an egg and in a few weeks began to discharge pus. Subsequently a number of ulcerations appeared about the elbow. Some of them healed entirely but others healed only partially. Examination showed an irregular area on the right forearm 2 in. wide and extending 4 in. from the olecranon which was covered with scars and numerous unhealed and partially healed ulcerations. Along the forearm were three subcutaneous nodules the size of walnuts which were hard and not tender. The Wassermann test was four plus. A diagnosis of gummatus syphilitic olecranon bursitis and multiple syphilitic gummata was made. Antisyphilitic treatment caused immediate improvement. The lesions were healed in eight weeks.

The author states that only thirty-four similar cases have been reported but that the condition is probably more common than this would indicate. The usual course and delayed diagnosis is illustrated by his two cases.  
FRANK G. MURPHY, M.D.

Willis T. A. The Age Factor in Hypertrophic Arthritis. J. B. & J. S. 1924 1: 316

To determine the relationship to age of hypertrophic arthritis in the lumbar spine, Willis examined 625 spinal columns in a museum. The classification employed was that of Swaim.

Between the thirty-fifth and fortieth years of age a definite change occurs in the body. This is greatest in heavy persons and least in slender persons. From the fortieth year onward the process increases steadily. After the forty-fifth year hypertrophic

bone changes are to be found in practically every person and progress regularly. Other causes be these are mechanical irritation from faulty posture, flexion, or traumatic defects, irritation due to chronic infection, and the absorption of toxins. The treatment must be directed toward the removal of such causes. *Recurrent S. K. M. M. D.*

**Form: C: Arthritis Deformans. A Clinical and Anatomopathological Study. Thirteen Cases.** (D. Sartorius, M. D., of the University of Chicago, Ill., U. S. A.) *Ch. d. med. d. med. m. 1913, 1, 1.*

Arthritis deformans is insidious in its onset and progresses slowly with periods of arrest. It may occur at any age but is most common in middle life. It does not cause constitutional symptoms and has no relation to sex. Usually it is monarticular in onset but eventually localizes in a joint in the lower extremities frequently the hip or metatarsal joint. There is generally some antecedent factor such as congenital luxation, an inflammatory process, or an injury.

The symptoms resemble those of any chronic arthritis but the condition can be differentiated by careful attention to the symptoms, signs, and anatomical findings. In the different stages of chronic articular rheumatism, gouty arthritis, and arthritis of nervous origin (tabes and syringomyelia) must be considered. The anatomical changes are best determined with the aid of the X-ray.

The result is always pain of varying intensity. This develops gradually with periods of remission occurring during walking work, rest in bed, and is frequently preceded by tight clothing, fatigue, and aches in the joints. Function is limited by a greater or lesser degree of muscular rigidity. At first prolonged rest increases and later a relative decrease in the limitation and less in the pain. With the progress of the disease increasing and limitation finally prevent all active and passive movement and necessitate complete immobilization.

In the early stage of luxation the head of the femur is limited internally and external rotation and circumduction are hindered. In a later stage, but in the early stage, the limitation also affects the joint of the hip, the limitation is not so marked. The joint of the hip is more obvious when there is luxation of the femur. The joint is enlarged but not spindle-shaped. There is no joint effusion. The limb is thin and is stiff and is short. The thigh and hip bones move as muscular atrophy. Joint crepitation is possible during active and passive movement. There are occasional signs of acute inflammation.

At first surgery is symptomatic but in the later stages and limitation of function is premonitory of objective signs such as crepitation, trophic and joint deformity become evident.

The end result is in the hip the femoral head is enlarged, flattened, and partially or completely

luxated perhaps into a new acetabular cavity on the ilium. The deformed acetabulum is filled with dense fibrous tissue. The head of the femur shows a general osteocytic laminous proliferation. The angle of the femoral head and neck becomes more obtuse. The articular cartilage which is large is destroyed also. The bone degeneration is due to absorption and substitution by vascularized fibrous tissue which penetrates the deeper layers. The cartilage has fissures and is a mass of bone.

The predominant and characteristic lesion of arthritis deformans is a location of the bone and cartilage. The osteocartilaginous line is narrow and saw toothed and more irregular where the vessels are more numerous. The spongy bone bleeds and is rarefied and friable. Its spaces may open directly into the joint. The blood vessels are sclerotic. The epiphyseal cap separates easily. The synovia is thick and fibrous and thickened. The capsule is greatly thickened and in the advanced stage often even is adherent.

The results of treatment are best at the onset of the condition and in young persons. Medical treatment—cold applications, massage of the joint and muscle regulation of the diet, etc.—is only palliative. Surgical treatment by resection offers the best outcome and is indicated when the disease does not improve under conservative treatment. If the whole joint is uninflamed walking is impossible and amputation is painful. In the cases of the femoral head and increased size, the head is removed, the stump of the neck is fitted into the cleaned-out acetabular cavity, and fascia or muscle are interposed between the stump and the acetabular cavity to facilitate movement. The angle of the femoral neck must be correct to allow a subsequent subtrochanteric osteotomy.

The author reports ten hip cases and five cases in which the metatarsal phalanx was involved. In five of the hip cases the condition was associated with congenital luxation in two with chronic rheumatism in two with infection and in one with trauma. In the cases of arthritis deformans of the metatarsal phalanx joint the condition is associated with hallux valgus in one and with articular enlargement, deformity, and stiffness in two. In the cases of the metatarsal phalanx the first metatarsal phalanx joint and the acetabulum of the femoral head in the hip joint gave good operative and functional results.

Author's data agree regarding the etiology and pathogenesis of the condition. The latter has been attributed to (1) trauma, (2) all metabolic diseases, (3) vascular disease according to (1) more recent hypotheses it is due to (1) primary cartilage necrosis (Laxhausen) or (2) altered function (Limmer). In the author's opinion none of these factors is sufficient. In cases in which no apparent cause in the history or findings of examination it is logical to assume that the primary condition is some congenital change in the joint.

WALTER C. BURKET, M.D.

**Phemister D B** The Causes of and Changes in Loose Bodies Arising from the Articular Surface of the Joint *J B & J* 15: 2 19 4  
278

According to on theory the formation of loose bodies in the joints is due to the impaction of opposing articular surfaces with flexion and rotation Barth stated that small pieces of bone may be chipped off by the pull of ligaments on their points of insertion According to Kappis the fracture of articular cartilage may be painless because of the lack of nerve supply Freiberg and Roesner claim that many loose bodies in the knee joint are due to injury of the spine of the tibia Buchner and Rieger on the other hand believe that portions of bone and cartilage cannot become detached by trauma to form loose bodies Axhausen attributes loose bodies in the joints to sequestration following injury to the blood supply of the joint In Ludloff's opinion loose bodies in the knee are formed from the lateral surface of the mesal condyle as the result of injury to the arteria genu media which leads to necrosis of the area supplied by this vessel

In experiments on dogs Phemister caused necrosis of the joint surfaces by means of radium but found that this condition was not followed by sequestration

Buchner and Rieger attribute loose bodies to fat embolism in the vessels supplying the affected region In a specimen of an intra articular portion of the distal end of the second metatarsal bone Axhausen recently found a low grade bacterial embolism of the artery supplying the area involved

According to Fromme loose bodies are detached by the development of the zone of transformation at the points of greatest stress This occurs in nutritional disturbances such as late clots and osteomalacia There is gradual destruction of disks of bone with replacement by a partially regenerated fibrocartilaginous layer

In cases of loose bodies in the joint with arthritis both conditions are probably due to the same disease process Early removal of the foreign body results in restoration of the joint If the foreign body is not removed it causes irritation of the joint surface which may result in arthritis deformans

Loose bodies may become permanently reattached or undergo transformation and remain free in the joint The bony portion undergoes necrosis but the cells of the fibrocartilage receive sufficient nutrition from the synovial fluid to proliferate so that the loose body gradually increases in size

Phemister concludes that no entirely satisfactory explanation for the formation of loose bodies in joints has yet been offered

RUDOLPH S REICH M D

**bursae and tendon sheaths** The term osteochondromatosis is limited to synovial osteochondromatosis unassociated with frank osteoarthritis or synovitis For some undiscovered reason the synovial membrane in cases of osteochondromatosis forms bodies which contain either cartilage or bone or both At first these bodies are attached to the synovial membrane by pedicles but the pedicles break easily and allow them to wander about Whether the bodies are nourished by the synovial fluid and increase in size after their detachment has not been conclusively established They are best considered benign neoplasms since absence of metastasis is an outstanding feature The process is peculiar in that the bodies are formed from the synovial membrane instead of from the articular surface as in osteochondritis dissecans and at times in osteoarthritis The bodies formed in synovial osteochondromatosis are composed of organized tissues and are distinct from those composed of unorganized tissues which are termed corpora oryzoides or rice bodies

In the series of nineteen cases reviewed two which could not be diagnosed definitely as osteochondromatosis were designated as probably osteochondromatosis

It is concluded that the bodies originate in the stratum synoviale of the synovial membrane The determination of the portion of the surface of the synovial membrane which seems most prone to produce bodies is of interest Special proliferation has often been noted in the region where the joint capsule joins the periosteum It is a question whether the origin is from bone or from cartilage Material studied indicates that the bodies may start either as osteomata or as chondromata

After the bodies enlarge they first become pedunculated and become detached to form loose bodies They develop slowly tend to remain localized and grow by expansion rather than by infiltration In the consideration of the growth before detachment the cartilage was first studied It was found to be pure hyaline fibrous or calcified or a combination of these forms Most of the cartilage in these attached bodies was well preserved but in the interior of some of the large masses evidence of retrogressive tissue changes was found The noticeably lobulated forms often occurring in these bodies of cartilage may be explained either by the sending off of buds by the growing cartilage or by the fusion of isolated knots of cells in the synovial membrane into a single mass by stretching and crowding out of the connective tissue between the lobules

The study of the growth of bone in the attached bodies revealed evidence that bone is developed directly from the connective tissue by the membrane method and also as endochondral bone by preformation in cartilage With regard to nutrition it was found that when there was vital proliferating bone there was also a blood supply but that when there were retrogressive tissue changes the blood supply had been cut off Osteoblasts occur only where there is a blood supply

**Jones H T** Loose Body Formation in Synovial Osteochondromatosis with Special Reference to the Etiology and Pathology *J Bone & J* 15: 9 4 4 7

The formation of synovial osteochondromatosis is a rare pathological process found in various joints

Next in order in the study of the growth of the bone was a consideration of the structures found. One is typical and common structure was the fibro-osteocartilaginous shell filled with fat in the spaces of bone which bore a striking resemblance to a cross section of a normal bone with its fatty marrow.

Attention is directed to the conditions present and the changes that take place in the bodies after detachment. Failure of cartilaginous growth after detachment is not conclusive. The finding of well preserved cartilage at the surface of a loose body does not prove that the cartilage is proliferating. Numerous free bodies are found with marked retrogressions in size changes even at the surface. On the other hand the small bodies usually show evidences of pellicle or are definitely attached while the larger bodies are generally detached. The bone in the detached bodies is always necrotic. Hence it is possible that cartilage proliferates when free in the synovial fluid. A wing bone of man is a blood supply. The possibility of reattachment of a body after detachment is mentioned.

The theory attributing the condition to infection has very little support either in the literature or in the findings in the cases studied. It is concluded that infection does not play an important part. The theory attributing the condition to trauma has very little support in the German literature but has been considered more important in the English and American literature. In eight of the nineteen cases studied by the author trauma was a prominent item in the history. The opinions expressed in the literature of the preponderance of males in the series of patients studied and the prominence of trauma in the histories make it seem reasonable to attribute considerable importance to trauma in the etiology of this condition.

According to the embryological theory advanced by Leser this chondroma like all other originates from scattered embryological rests which have arisen as the result of a fault in the mesenchymal differentiation in the formation of the joint. In the embryo before a joint is formed the cartilage which develops into bone is separated by undifferentiated mesothelium. Some of these cells undergo mucoid degeneration and form a joint cavity others become spindle shaped and form articular cartilage and those at the sides of the cavity form a synovial membrane. Without doubt the bursal sacs which are often connected with the joints are closely related to the joints developmentally. As we do not know why the mesenchymal cell forms a mucoid fluid while another forms cartilage and another a synovial membrane it is impossible to determine exactly how abnormal forces can cause cartilage to develop in the synovial membrane. However the theory is logical. It does not contradict any of the other logical theories and the consideration of the tissues in their developmental stages helps us to approach the problem.

The discussion of the problem from the developmental standpoint leads directly to the neoplastic theory which is supported in the literature. Various

other tumors of the synovial membrane have been reported such as fibromata, lipomata and angiomata. Several cases of malignant tumors of the synovial membrane have been reported but in the series of cases studied by the author it was not definitely proved that the growths were primary in the synovial membrane. The occurrence of other tumors of the synovial membrane helps in placing the synovial osteochondromata. Admitting the limitations of the *propter hoc* argument the replacement theory still has support in the relationship between trauma and the development of synovial osteochondromatosis. The occurrence of various stages of tissue differentiation and the attempt to reproduce certain normal structures.

Before giving his conclusion the author denotes a benign neoplasm as a neoplasm characterized by an expansion rather than an infiltrating growth by slow growth by the absence of mitotic figures by encapsulation by its failure to metastasize by non-recurrence after complete removal by its composition of well-differentiated cells and by its failure to induce cachexia. Synovial osteochondromatosis he believes is therefore to be classified as a benign neoplasm.

MacKinnon in A.P.S. Progress in Myositis Ossificans  
A Report of a Case and a Review of the Literature  
*J. B. J. 15, 5, 524, 51, 33'*

MacKinnon reports a case of progressive myositis ossificans in a farmer 10 years of age who complained of muscle stiffness which began in his arms. He had a back when he was 25 years of age. With a period of four years he had become practically disabled as both knees and the right hip had become fixed. Across the back and on the shoulder the left arm both thighs and the legs large ridges of bone could be seen and felt. There was bilateral metacarpal of the great toes caused by fusion of both phalanges. Metabolism and blood studies were negative.

MacKinnon reviews 132 cases reported in the literature and draws the following conclusions:

The disease develops in the first two decades of life and more frequently in males than in females. Heredity is not an important factor. At times cases show microstelia of one or more digits. The new bone has the characteristics of bone in normal situations. To date treatment has been unsuccessful.

C. STEWART, C. SCOTT, M.D.

George A. W. and Leonard R. D. Fundamental Facts Relative to the Study of the Vertebral Industrial Accident Cases. *Am. J. 9, 4*  
1917

The authors have made a study of vertebral conditions attributed to industrial accidents. As a normal standard must be obtained before variations from the normal can be determined they attempted to establish the normal by making tracings of 100 roentgenograms with little variation. The average of these was accepted as the normal.

Among the common congenital anomalies is a bifid spinous process of the fifth lumbar vertebra. In the authors' opinion this does not cause clinical symptoms and cannot be regarded as the result of accident. Sacralization of the transverse process is also common but does not cause symptoms independently.

Changes in the spine due to age, the type of occupation and posture were studied. These occur gradually and are never attributable to any single injury.

Changes due to injury are compressions on fractures of the vertebral bodies. These never cause complete obliteration of the intervertebral spaces. The space may show narrowing but does not completely disappear. The authors have never seen a fracture of the body of the fifth lumbar vertebra. Kummell's disease, which is supposed to represent the end result of injury, is attributed by the authors to disease rather than to injury.

It is doubtful also whether spondylolisthesis can be produced by injury. Sacroiliac dislocation, a very rare true dislocation, is caused only by extreme violence, never by lifting.

Hypertrophic arthritic changes, which are common, cannot be regarded as due to a single accident. The type of occupation may be an etiological factor. The changes are the development of years.

Spondylus occasionally causes a Charcot picture in the vertebrae. The changes must not be confused with those due to injury.

BERNARD H. MOORE, M.D.

Sorrel, Sorrel D. Jerine and Couturier. Suboccipital Pott's Disease and Death from Meningitis (M.D. Pott sous-occipital mort par méningite) *Bull. et mém. Soc. d'et. Pa.* 9, 4, xc, 186.

Sorrel, E. and Sorrel Dejerine. Suboccipital Pott's Disease and Sudden Death (M.D. Pott sous-occipital mort subite) *Bull. et mém. Soc. d'et. Pa.* 9, 4, xc, 86.

The first case reported was that of a girl 10 years of age who entered the hospital for the treatment of cervical adenitis. Large irregular masses in the neck were partially softened on the right side and fistulized on the left. There was a history of suboccipital pain and fever for six months. The head held stiffly, was supported on the hands and flexion, extension and inclination were greatly limited. The voice, respiration, swallowing and reflexes were normal. No retropharyngeal abscess could be palpated. The second cervical spinous process projected prominently. The skin test for tuberculosis was positive but the serum test was negative. The X-ray showed sinking of the upper two cervical vertebrae; the atlas had collapsed on the axis and the odontoid process had ascended above the atlas.

The patient was placed on a gutter bed in extension but her general condition steadily became worse. A retropharyngeal abscess developed and abscessed to a small incision without incision. Aspiration of a large fluctuating submastoid swelling evacuated a

thick grumous greenish material which produced tuberculosis in a guinea pig. Ultimately there was total deafness with persistent headache and the appearance of Kernig's sign. Five months after a diagnosis of suboccipital Pott's disease was made the child died in coma from meningitis.

Autopsy revealed meningitis of the cerebral convexity, sinking of the two cervical posterior arches and two abscesses which arose from the occipito-atlantal articulations. The abscesses had herniated symmetrically between the occiput and the atlantal arch and had spread out behind the spinous processes forward to the mastoid in front of the occiput to the fourth cervical vertebra and within the spinal canal to the third cervical vertebra. The occiput anterior to the foramen magnum, the occipito-atlantal articulation and the upper surface of the anterior atlantal arch were denuded, eroded and covered with fungosities. The odontoid dislocated from the atlas had ascended to the anterior edge of the occipital foramen and caused slight narrowing. The intact spinal dura mater was extremely thick, covered with fungosities and bathed in pus. The thoracic and abdominal viscera were normal.

The second case reported was that of a boy of 13 years who had had suboccipital pain and limitation of the movements of the head since he was 4 months old. A plaster jacket had been worn for one month. The head was held stiffly inclined to the left by contraction of the sternocleidomastoid muscle. Rotation to the left was impossible and rotation to the right was markedly limited. Flexion and extension were also restricted. The skin and serum tests for tuberculosis were positive. The X-ray showed the posterior axis arch directed obliquely upward against the occiput. The posterior atlantal arch was invisible; the atlas and axis were telescoped, the axis being inclined laterally and the head and axis forward. The posterior pharyngeal wall was lifted away from the upper cervical column. This finding suggested abscess but none was palpable. The reflexes were normal.

The child was placed in a plaster jacket in extension in bed in the open air by the sea but steadily declined. Death occurred suddenly without sound or cyanosis and with only a slight convulsive movement of the limbs.

Autopsy revealed no visceral lesion. The head and atlas were displaced forward, sunken and rotated on the axis. The left atlantal arch was pinched between the axis and the occiput by inclination of the head. The posterior axis arch almost touched the occiput. There were two abscesses. One was between the occiput and the atlas and the other on the anterior surface of the first four cervical vertebrae. The base of the odontoid and axis were ulcerated. The odontoid with its atlantal articulation destroyed, abutted against the occiput and was bent abruptly inward at the base. Because of this bending it projected into the spinal canal at the second cervical vertebra at a point already narrowed by the forward luxation of the atlas on the axis. It is



probable that this produced sudden cervical compression above the level of the phrenic nerve roots with paralysis of the diaphragm and intercostals that caused death. Gauthier reported a sudden death from cervical cord compression at a lower level.

The authors believe that this is the first reported case of pressure from a bent odontoid process. This could occur only in childhood when the odontoid has not yet been united to the axis. Union begins between the fourth and sixth years of age and is not complete until much later.

The case is of interest because sudden death in suboccipital Pott's disease is rare; the patient had been in bed in the plaster jacket in extension in an apparently correct position for fifteen months; a lateral X-ray examination showed a retropharyngeal abscess and considerable luxation of the atlas on the axis did not produce signs of medullary compression.

WALTER C. BURKET, M.D.

Brooks, B. Diseases of the Blood Vascular System of the Extremities. *J. B. & J. L. S. Co.* 1924. 173 pp.

In one series of experiments on dogs the author studied the effects of ligation of the primary arteries of the extremities. Ligation of the iliac and hypogastric arteries resulted only in fatigue. After a short period of weight bearing the extremities became useless but after a rest they recovered and gradually improved until they were again normal. Examination of the muscles showed only ischemia. In other animals in which there was less collateral circulation ligation of the iliac and hypogastric arteries resulted in necrosis of the skin and muscles with a sharp line of demarcation between the paralyzed and the unparalyzed muscles. From these findings Brooks concludes that Volkmann's ischemic paralysis is not due to permanent arterial obstruction.

In a second series of experiments the effect of temporary arterial obstruction was studied. The effects of temporary occlusion of the arteries of the extremity differed from those of permanent obstruction in that the necrosis of tissue was more extensive in the muscles. The muscles showed many small areas of necrosis replaced by fibrous tissue.

A third series of experiments was carried out to determine the effect of altered circulation in a single muscle. The dog's rectus femoris was freed and ligated at its origin and its insertion. Ligation of the artery usually caused no anatomical or physiological change but in a few instances the muscle became necrotic and completely absorbed. The same result followed ligation of both the artery and the vein but the latter caused complete necrosis of the muscle more frequently. Obstruction of the vein alone resulted in swelling of the muscle and extensive infiltration with blood and polymorphous clear leucocytes. The muscle showed acute inflammation followed by fibrosis.

A fourth series of experiments was carried out to determine the frequency of gangrene following obstruction of the primary arteries alone and following obstruction of the primary artery and vein of an extremity. Obstruction of the iliac and hypogastric arteries of twenty rabbits resulted in gangrene of the extremity in fifteen. Of eight experiments in which the iliac and hypogastric arteries were obstructed with the common iliac vein six resulted in gangrene. In two animals in which persistent edema was caused by injecting barium sulphate paste into the common iliac vein and the aorta was ligated gangrene resulted only on the side of the venous obstruction. The conclusion is drawn that the frequency of gangrene following ligation of the arteries is decreased by a certain amount of simultaneous venous obstruction and increased by a greater amount of venous obstruction.

In a fifth series of experiments carried out to determine the effect of ligation of the primary artery and subsequent ligation of the primary vein on the volume flow of blood, the ligation of one iliac artery for a period of from four to six hours caused a decrease in the temperature of all of the tissues of the extremities which was greatest in the most distant tissues. Removal of the obstruction restored the temperature to normal. Simultaneous obstruction of the corresponding iliac vein resulted in a further fall in the temperature. These effects were due to a reduction of the volume flow of the blood.

In a sixth series of experiments the intravascular pressure distal to the obstruction of an artery was measured and the effect exerted on this pressure by obstruction of the concomitant vein. The blood pressure was studied under the same conditions as in the fifth series of experiments. It was found that the decreased intravascular pressure of the extremity distal to the obstruction of the artery was increased by subsequent obstruction of the primary vein.

Applying the results of the experiments to surgical therapeutics Brooks attributes Volkmann's ischemic contracture to total obstruction of the venous system without obstruction of the arterial system.

Contracture may follow temporary or permanent obstruction which results in severe anoxia followed by rapidly developing collateral circulation. Areas of focal necrosis develop in the tissue and are replaced by fibrous tissue with contraction.

In conditions in which it is necessary to ligate the main artery of the extremity the risk of gangrene will be decreased if a certain amount of venous obstruction is produced.

In case of pontaneous gangrene amputation is still the treatment indicated when the entire arterial tree is occluded. When the arterial disease is confined to a relatively small area as in the case of thrombosis or embolism of the popliteal artery perivascular sympathectomy or bridging by a vessel transplant may be done. RUDOLPH S. REICH, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Ber A Bone Regeneration Pseudarthroses and Bone Transplants (Ueb. Knochenerregung u. b. P. u. d. th. d. u. e. t. e. r. Knochentranspl. t. t.) i. k. f. kl. Ch. 923 CXI II 2

In discussing callus formation the author pays particular attention to metaplastic bone formation and draws a distinction between purposeful and purposeless proliferation of callus. Purposeful callus formation is dependent upon local stimulation by hormones. If this stimulation fails or is overcome as by infection the callus formation is purposeless. In fracture of both bones of the forearm a bridging callus is disadvantageous as it hinders rotation but in cases of pseudarthrosis in a single bone it may be of advantage. The author recommends the use of 2 per cent gelatine to prevent the formation of new bone after operation on bone which has been formed by metaplasia.

When a piece of bone is taken from the tibia the most perfect regeneration occurs when periosteum, cortex and marrow are removed with it. If the periosteum and cortex only are removed or if subperiosteal resection of a piece of bone is done no true regeneration takes place. Enlargement, indentation or narrowing of the medullary cavity is found in the area from which the bone was removed. Therefore retention of the periosteum prevents restoration of the bone in its former shape and results in a structure resembling a cicatrix. True regeneration occurs only when the medullary cavity is opened and some of the marrow must remain. Extensive removal of the periosteum leads to important changes in the bone. Restoration of perfect shape is obtained only when the defect in the bone is filled by extravasation of blood.

With regard to regeneration of bone in cases of defects involving the entire thickness of the bone, interesting observations were made in cases of apertural lengthening of the femora in dwarfs and in cases of shortened humeri. The regeneration took place by metaplasia due to stimulation of the soft parts. The end of the bone took no part in the process. In the attempt to bring about apertosteal regeneration of bone in the articular region after excision of the fracture ends were kept in apposition for a long period since it was expected that the new bone formation would be slow. The latter was the case. More or less pseudarthroses or neoarthroses were formed.

Besides the metaplastic regeneration which is unconnected with the bone, new bone grows out from the bumps in the region where the joints were formerly situated. There are various types of pseudarthrosis: (1) the fissure type, the most common variety which arises from ordinary fracture of bones; (2) pseudarthrosis from the interpositum of soft parts, the most rare type; and (3) pseudarthrosis due to a defect which is rare in times of peace but common during war.

Fracture of the bone near a joint seldom leads to pseudarthrosis and failure of callus formation is rarely responsible. As a rule the line of pseudarthrosis forms later in the callus joining the ends of the bones. The fissure in the callus runs sometimes transversely sometimes obliquely sometimes it assumed from the beginning the lines of an articulation although the parts are immobilized and friction cannot be a factor. Too much importance has been ascribed to gross mechanical injuries in the causation of pseudarthroses. Mechanical influences may favor retardation or alter the formation of the articular extremities but never produce pseudarthrosis. As a rule the upper end of the pseudarthrosis has the form of a head while the lower end is like a socket but sometimes the reverse is found. The neighboring joints do not appear to influence the form of the pseudarthrosis but inflammations and suppurations have a powerful influence.

With regard to the relationship of pseudarthrosis and callus the author states that all forms of callus which lead to fracture healing appear also in pseudarthrosis. A pseudarthrosis in a transplant occurs at the exact site of the former pseudarthrosis. Up to this point the transplant increases in strength while at the site of the old pseudarthrosis a weak zone is formed by an absorptive process. The pseudarthrosis runs at first in a straight line but later assumes the lines of a joint, the head usually being above and the socket below. As a rule the transplant does not fracture but if this should happen to occur there is no reason why the fracture should not heal. Pseudarthroses are most common in transplants which are driven into the medullary cavity in the form of a wedge. They are found between the surface of the wedge in portion of the transplant and the interior of the bone and occur not only when the chip of bone is bare but also when it has a periosteal covering. The third form of pseudarthrosis in a transplant arises between the end of the transplant and the bone.

Bier sees in pseudarthrosis an imitation of the normal joint caused by a morbid stimulation. This stimulation persists at the site of the pseudarthrosis. Only thus are recurrences in the transplant explainable. The formative stimulation creates an extraordinarily involved anatomical structure, a joint at a site where it does not belong. This formation is therefore metaplastic. It arises from portions of tissue which first make bone. After dealing with the bony changes in joints and pseudarthroses which are seen here, Bier discusses Martin's experimental formation of pseudarthroses. After removal of the cortex and periosteum from the radius, Martin regularly observed changes in the ulna consisting in a sympathetic disappearance of bone and sympathetic pseudarthrosis. In man the influence on the adjacent bone was less marked. Joints near pseudarthroses have a tendency to become ankylosed. Operative pseudarthroses are followed by growth disturbances, noteworthy also is the marked atrophy of the section of bone situated peripherally to the pseudarthrosis.

In conclusion the author discusses the fate of bone transplants the question of new bone formation and the complete absorption and final disappearance of the graft. As a rule the transplant bone takes the shape of the original bone but sometimes it conforms to that of the bone from which it was taken.

This article is especially valuable because of the extensiveness of the material upon which it is based. Of pseudarthroses alone more than 600 examples are given.

FRANÇOISE M. (Z)

**Odermatt W.** The Formation of Pseudarthroses in Bone Transplants (Pseudarthrosis in Bone Transplants). *Chirurgia (Basel)* 1941; 19: 41-56.

The first case reported was that of a 4-year-old girl with paralysis of the right leg due to poliomyelitis. The ankle joint was fixed by arthrodesis performed according to Lexer's method. A hole was drilled through the calcaneum, the talus and the end of the tibia and a periosteum-covered section of the patient's tibia 8 cm long and from 6 to 8 mm wide was introduced into the canal. A plaster-of-Paris bandage was then applied and the patient sent home.

Eight weeks later the X-ray revealed a loss of continuity in the talocrural articulation. In spite of another fixation a pseudarthrosis developed. Following the removal of the cartilage masses from the end of the tibia and fibula and the drilling of both bones, a ivory pin about 1 cm thick was placed in the canal and a plaster of Paris bandage applied. On the removal of the plaster two months later the joint was still mobile and the roentgen picture showed two fractures in the ivory insert, one in the upper portion of the joint capsule and the other in the epiphyseal line of the tibia.

The author reports also a similar case in a girl of 8 years.

These cases again demonstrate that the body has the power to wear away a rigidly fixed transplant which interferes with necessary motion. This power is greater the younger the subject. Therefore operations for arthroses should not be performed too early that is not before the fifteenth year of age.

TOULON (Z)

## FRACTURES AND DISLOCATIONS

**Hitzmann O.** The Findings in Bilateral Dislocation of the Hip Subjected to Operation (Bilateral Dislocation of the Hip Subjected to Operation). *Chirurgia (Basel)* 1941; 19: 41-56.

To determine the postoperative changes Hitzmann examined the heads of the femora in a case of bilateral dislocation of the hip in a girl 9 years of age. The left femoral head had been replaced 6 years previously but the replacement of the right head had not been successful. Resection was done because of the great disability on both sides. In the roentgenogram the usual form of the head and neck was

found on the right side but on the left side there was marked deformity of the head with shortening of the neck of the femur.

Microscopically the unreduced head showed a thinning of the cartilaginous covering, a very small epiphysis and fracture remnants in the epiphyseal bone which Hitzmann attributes to the reduction. The replaced head also showed distinct remnants of a severe fracture of the cartilage and bone. These also Hitzmann considers the result of the replacement trauma.

Hitzmann concludes that Perthes disease is a fracture occurring in a crotic bone and that the development of Perthes osteochondritis in the replaced femoral head as described by Brande is not a true osteochondritis but a fracture due to replacement trauma.

KAUFMAN (Z)

**Dickson F. D.** The Operative Treatment of Old Congenital Dislocation of the Hip. *J. Bone & Joint Surg.* 1941; 23: 4-16.

In cases of old congenital dislocation of the hip operation is elective. The indications are disability sufficient to interfere with normal life and disfiguring deformity.

In the author's series of eight cases the signs and symptoms were pain in the lower part of the back, pain in the dislocated hip, shortening of the leg, a limp and diminished capacity for work. The disability therefore consisted of three factors: a short extremity, an unstable hip joint and abnormal posture the result of the first two.

Of five cases operated upon the result was satisfactory in four, the limitation of movement and the shortening of the leg being definitely decreased. In the fifth case infection caused limitation of motion.

The operation recommended consists in forming a new acetabulum by turning down a shelf from the side of the ilium as suggested by Albee. It is similar to that performed by Jones for dislocation of the hip due to infantile paralysis.

The patient was placed on a Bradford frame and traction was applied for two weeks before the operation. The operation was performed on a McKenna table. Traction apparatus was applied to both legs. In the first case a plaster in the form of Buck's extension was used. In the second case crutches were applied and in the last three cases a Stimmann pin was introduced through the condyle to make traction on the dislocated hip. The Smith-Petersen incision was employed.

All of the structures which seemed to interfere with the downward movement of the dislocated head were divided. The capsule was cut away in all directions, the iliopectineus tendon was divided. After the head had been freed the adductors were divided unilaterally. Traction was then applied to both legs and gradually increased, a careful watch being kept for circulatory disturbances from too much traction and for signs of shock. The head was pulled down to a point opposite the upper rim of the true acetabulum. The flap was turned down with a



Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 1 Diagram of the pelvis showing the position of the hip joint. The position of the hip joint is shown after the hip joint is pulled down by traction. The position of the hip joint is shown after the hip joint is pulled down by traction. The position of the hip joint is shown after the hip joint is pulled down by traction.

Fig. 3 The position of the hip joint after the hip joint is pulled down by traction. The position of the hip joint is shown after the hip joint is pulled down by traction. The position of the hip joint is shown after the hip joint is pulled down by traction.

large curved gouge. It consisted largely of the false acetabulum lined with a modified fibrous tissue which was smooth and thickened and resembled somewhat normal capsular structure. This prevented in some degree the formation of adhesions and ankylosis. After the flap had been turned down until it was in apposition to the head of the femur a wedge of bone taken from the crest of the ilium was placed between the flap and the side of the ilium, fitted into the space snugly and fixed with one or two catgut sutures. The wound was then closed in layers and a plaster cast applied traction being maintained. After the patient was returned to bed traction was continued by Buck's extension through slits in the cast in the first case and by the ice tongs and Steinmann pins in the others. A window was cut for these instruments which had been left *in situ*.

The author states that in the future he will not use a cast but will rely on traction to secure immobilization.

At the end of the fourth week the cast was removed and daily massage and cautious movement of the hip were begun, the cast being replaced after this treatment. At the end of six weeks the traction was removed and the patient was allowed up and about on crutches still wearing the cast. Gradual weight bearing was then permitted. Traction was reapplied when the patient returned to bed. The cast was discarded at the end of from eight to ten weeks.

DANIEL H. LEVINTHAL, M.D.

Shipley A. M. A Report of 190 Fractures of the Femur. J. B. & S. S. 94 35

Shipley reviews 190 cases of fracture of the femur treated at the University Hospital Clinic, Baltimore during the last five years. He believes that in subcapital or intracapsular fractures of the neck of the femur a beef bone peg should be driven into the neck through the great trochanter. The next best procedure is immobilization in plaster in the Whitman position.

Intertrochanteric fractures should be treated by immobilization in plaster and the use of the Hawley

table to obtain extension, strong abduction and internal rotation. In cases of fracture just below the trochanters the leg should be immobilized in the position of the proximal fragment the Downey table being used to obtain traction. In cases of fracture of the mid shaft closed reduction or open operation should be done depending on the indications. Supracondylar fractures should be treated with extension and counterextension with the Steinmann pin, the Balkan frame and flexion of the leg on the thigh. Articular fractures should be reduced and immobilized in plaster. Shipley is an enthusiastic advocate of the use of plaster.

CHARLES C. SCHNEIDER, M.D.

Meyering H. W. The Non Operative Treatment of Recent Fractures of the Femur. J. B. & S. S. 924 37

Meyering discusses the rather unusual types of fractures seen at the Mayo Clinic and the comparative rarity of recent lesions.

Seventy five per cent of the cases of fracture observed in the Mayo Clinic are cases of non union delayed union malunion chronic osteomyelitis or joint stiffness following treatment elsewhere. Of 1000 cases of old fractures 221 were cases of non union of the long bones. Of 120 ununited fractures of the neck of the femur twenty six were operable.

For recent fractures of the hip the Whitman treatment is advocated. Meyering has devised a method of obtaining joint motion after the sixth week by the application of two lateral hinges incorporated in the cast to prevent knee stiffness. No recent fractures of the hip have been operated on. Of 222 conservatively treated fractures of the femur fifty seven were recent. The remaining 165 presented non union malunion etc.

The relationship of age to the treatment is discussed. Sometimes it is necessary to treat the patient and to accept the fracture with deformity in order to save life. Meyering stresses the value of repeated X-ray examinations and mensuration. He believes that adhesive traction and Buck's extension

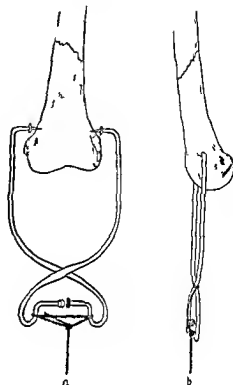
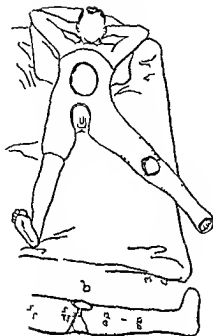


Fig. (1) Cast applied following human reduction. It extends from the thorax to the toes in the fractured side and to the knee on the sound side. A large window is left over the patella and the abdomen. (b) After the method of procedure is established by means of the plaster placed in the cast. Later the cast is cut off all work motion.

as well as casts will continue to be used but will be gradually supplanted in most cases by adhesive traction combined with use of the Thomas extension splint. He outlines the routine followed at the Mayo Clinic in the examination and care of fractures and states that with such accurate records and intelligent treatment the physician is better able to prevent embarrassing complications. For fractures of the trochanteric area and shaft he advocates extension treatment. After reviewing the various methods of obtaining traction he states that the caliper extension is the most efficient. This he uses in conjunction with the Thomas splint or the Sinclair modification of this splint.

In supercondylar lower femoral fractures the caliper is applied anterior to the axis of the femur and traction is employed in conjunction with the use of the Sinclair modification of the Thomas splint the knee being flexed. Meyerding believes that unless practically anatomical reposition is obtained

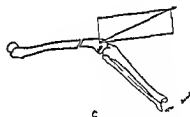


Fig. (a) Extension traction applied anteriorly. (b) Later with window cut out to allow light to the axis of the femur to pull the proper distal fragment into alignment. (c) Result of force applied to fracture of the lower femur.

intra-articular fractures result in permanent partial disability and that therefore in such cases operative interference is justified.

Five case histories are reported to demonstrate points and the apparatus used in the Mayo Clinic shown in illustrations two of which are reproduced above. One of the principal features of the Mayo Clinic treatment is the use of the Balk frame in conjunction with the Bradford frame the latter being elevated by the use of a windlass to facilitate nursing, etc.

### Taylor W J Shaft Fractures of the Tibia and Fibula

In the majority of the author's cases of shaft fracture both the tibia and fibula were involved. These bones are broken in about 10 per cent of all fractures. The most common cause is indirect violence.

When the tibia alone is involved the fracture usually occurs in the middle third and there is some displacement of the fragments. When the fibula alone is involved the fracture may occur in any part of the bone. Fractures of the tibia are transverse, oblique or spiral.

In the reduction of fractures the fluoroscope should always be employed. Since the tibia is the weight bearing bone an associated fracture of the fibula may be disregarded if the tibia is properly adjusted. In some cases relaxation of the contracted muscles may be obtained by simple massage. The Thomas splint is used with 10 lbs weight. The extension is applied by a direct pull with weights or the use of a thumb screw arrangement.

After treatment for about a week in the Thomas splint and frequent fluoroscopic examinations the leg is put in a splint devised by the author which permits daily movement of the knee. Passive movements of the knee and ankle and physiotherapy are instituted early.

The author's splint consists of a base board 30 in long 11 in wide and 1 in thick to which another base board measuring 18 by 1 in is attached with hinges. The latter may be placed in any desired position. It is held by movable braces which run from the end opposite the hinges to the base board upon which rests the leg above the knee. At the end opposite the hinges is attached also an iron frame 8 in long 1 1/2 in high similar to a Thomas splint and works on swivels.

When union is well established a cast is applied and the patient is permitted to use crutches. The cast is split to permit massage.

JOHN MITCHELL, M.D.

### ORTHOPEDICS IN GENERAL

#### Platt H C The Early Mechanical Treatment of Acute Anterior Poliomyelitis

The author states that the serious disability resulting from acute anterior poliomyelitis is frequently dependent more on the deformity than on the paralysis and that it is necessary first to overcome the deformity before carrying out measures to overcome the paralysis or to stabilize the joint. The preliminary treatment may require a long time but when the deformities are eliminated the patient can usually walk though he may require crutches.

As prophylactic treatment must be begun early the symptoms of the acute disease must be recognized in the early stages. The clinical stages with somewhat arbitrary limits are described.

1. The acute stage usually lasting not longer than from four to six weeks.

2. The recovery stage which extends approximately to the end of the second year.

3. The chronic stage lasting from the third year onward.

In the acute stage the signs and symptoms are usually stiffness of the neck, pain in the back and limbs and marked tenderness of the limbs.

The development of paralysis in a few days is very suggestive of anterior poliomyelitis.

In the treatment mechanical methods are important. Complete rest is the first essential. This can be given by completely immobilizing the patient in the recumbent position. Deformity can be prevented by maintaining the limbs in positions known to be antagonistic to common contractures. For the lower limbs these positions are extension of the hips and knees with the feet maintained at right angles to the leg. For the upper limbs they are right angle abduction of the shoulder, flexion at the elbow, supination of the forearm and dorsiflexion at the wrist. Relaxation of paralyzed muscles is essential. In the acute stage the patient should be kept perfectly quiet without any meddlesome therapeutics until both pain and tenderness cease. When this occurs which is usually at the end of from four to six weeks the patient should be examined. He has then reached the stage of recovery and will require suspension for a long time to prevent deformity.

The author concludes by stating that teamwork between the physician and surgeon is most essential.

FRANK G. MURPHY, M.D.

#### Von Lacksch H L The Lumbosacral Region An Anatomical Study and Some Clinical Observations

This study is based on a careful examination of thirty bodies, five of which were female.

The specimens consisting of the pelvis and lumbar spine were divided by sawing through the midline the spinous processes and the bodies of the vertebrae on either side being thus exposed. The author discusses motion and the articulations of the neural arch in this region. Normally the articulations are gliding planes on which gliding motion takes place. They do not bear weight. In the lumbar region rotation is checked by definite internal-external articular processes lying in the sagittal plane at the lumbosacral juncture. Motion is increased by the addition of more or less rotation due to articulations inclining outward. When these articulations are asymmetrical unequal rotation results and as the lumbosacral joint is the juncture of a mobile and an immobile part and the point at which there is a sharp change in the direction of the spinal column it becomes weakened.

The center of gravity of the body is approximately in the upper lumbar region and the weight bearing line of the spinal column passes down through the middle of the normal spinal curves leaving the lumbosacral juncture to carry all of the superimposed weight.

Regardless of position or weight the lumbosacral articulation bears the strain. The degree of this shearing strain is controlled only by the angle of the upper surface of the first sacral segment.

Stabilization of this joint depends upon ligaments and muscles, the intervertebral disk, and the shape and size of the first sacral body. The spinous processes and laminae also play an important part. The closer they are together, the shorter and more compact are the ligaments and the stronger is the part.

In cases of injury to this region fusion may be established without affecting the usefulness of the part.

Among the important points brought out in this article are the following:

1. The strain at the joint is always shearing regardless of position.

2. The shape of the first sacral is of primary importance in reducing this strain because of its bearing on the angles which either increase or decrease it.

3. Backache may be caused by an increased angle and consequently increased strain.

4. The rotating action in the joint favors the occurrence of fractures and dislocations in this region.

HERMAN C. SCHUMM, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Heard J E Postoperative Pulmonary Embolism  
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Postoperative pulmonary embolism may be caused by a discharged blood clot or the entrance of fat into the circulation. It is often diagnosed incorrectly as pleurisy, myositis or bronchopneumonia especially when the physical findings are few. In the differential diagnosis coronary sclerosis must be considered.

In an otherwise uncomplicated convalescence pulmonary embolism usually occurs within the first or second week after operation while the patient is engaged in some type of physical exertion. It causes precordial pain, a tight sensation in the chest, dyspnoea, rapid and labored breathing and rapid pulse of poor volume. The facial expression is anxious and the skin is cold, clammy and covered with cold sweat. Death often follows in from five to twenty minutes.

The treatment of this condition is discouraging. The conditions favoring the development of postoperative embolism may be grouped as follows:

1. Conditions (a) the patient such as (a) anemia (b) the presence of micro-organisms in the blood stream (c) leucocytosis and (d) blood concentration.
2. Faults in the operative technique and postoperative care such as (a) prolonged use of the Trendelenburg position (b) careless transfixation of pedicles and ligation of blood vessels (c) prolonged time on the operating table (d) careless and rough use of retractors and (e) infection.

Among the postoperative preventive measures are (1) the use of heart stimulants, (2) the administration of large amounts of fluids by mouth, skin or rectum, (3) the firm movement of the limbs as soon as possible after operation and (4) frequent changes of position.

In a large percentage of cases of pulmonary embolism death occurs within a few minutes after the onset of the symptoms. The treatment should consist in elevation of the patient to facilitate respiration, fresh air or oxygen inhalations, the application of heat, venesection if the heart is dilated and the administration of cardiac stimulants such as caffeine, strychnine, ammonia and ether and the administration of morphine to relieve the pain and counteract the shock.

Trendelenburg has advocated operative removal of the clot in cases in which only one branch of the pulmonary artery is occluded.

Wilson in 1912 reported the cases of postoperative embolism occurring at St. Mary's Hospital, Rochester, Minnesota from 1889 to 1911 inclusive. During this period there were thirty-eight deaths

to embolism among 3,000 cases of major operations. The diagnosis was confirmed by autopsy in forty-one. The total number of deaths in the hospital during the same period was 864. The mortality from embolism based on 64,513 operations was 7/100 or 1 per cent or one death in every 1,352 operations. There were thirty-six cases of pulmonary embolism (ten cases of cerebral embolism and one case of coronary embolism). In the period from 1912 to 1919 inclusive there were 104 cases of postoperative embolism. Five of the patients recovered. In ninety of the ninety-nine fatal cases the diagnosis was confirmed by autopsy. A total of 123,164 operations were performed. Pulmonary embolism occurred once in 1,203 operations (8/100 or 1 per cent).

Tables are given showing the number and type of operations in which death occurred from pulmonary embolism. From these it is evident that the complication occurs most frequently after pelvic operations.

MARLE R. HOOVER, M.D.

Helle S. Bilateral Thrombosis of the Renal Veins  
in a Newborn Child (Thrombose der Nierenvenen  
bei einem Neugeborenen) Z. f. Kinderheilk. 1923 1 897

The case reported was that of a previously healthy infant 9 days old weighing 3,200 gm. The sudden development of a high fever was associated with convulsions and the appearance of blood in the stools. On the third day there was marked haematuria. On the fourth day a kidney-shaped tumor the size of a hen's egg was demonstrable in the left hypogastrium. On the eleventh day only 40 c.c.m. of urine were passed in twenty-four hours. On the fourteenth day there was anuria. Death occurred on the fifteenth day.

At autopsy bilateral necrosis of the kidneys was found. This had resulted in thrombosis of the renal veins. Other findings were thrombosis of the inferior vena cava and gastro-enteritis. The author ascribes the general condition to an enteric infection. He believes it probable that the haemorrhage and infarction of the tubular parenchyma were produced by the toxins excreted in great concentration by the kidneys.

HÄNDEL (C)

Fernan E. A Case of Embolectomy (Caso de  
Embolectomía) J. de Med. 1924 1 55

The author reports a case in which embolectomy was performed on a man 46 years of age. The embolus which was situated in the common iliac artery was removed by means of retrograde probing through an incision in the common femoral artery. The operation was performed one hour after the gas was first noted. The circulation of the leg was completely restored.





In proof of the efficacy of ligation of the popliteal vein Bertone cites the clinical histories of five cases. In the first case in which both popliteal veins were resected a recurrence developed in one leg after an interval of thirteen years but the other leg showed no sign of recurrence fourteen years after the operation. The second third fourth and fifth cases showed no sign of recurrence after fourteen years one year three years and two years respectively.

### BLOOD TRANSFUSION

Riccardoni A and Albo M. Chronic Purpura without Splenomegaly Cured by Splenectomy.  
(Purpura haemorrhagica splenomegalica)  
I. pl. t. m. c. B. H. t. m. S. m. d. d. h. p. d.  
Pa. 924 3 s. 1 493

Kaznelson was the first to employ surgery in the treatment of purpura with splenomegaly. Minkowski performed splenectomy in cases of purpura without splenomegaly. In 1912 Steinbruch collected

ten cases of thrombopenia for which splenectomy had been done.

Riccardoni and Albo of Uruguay have performed splenectomy in two cases of purpura in women. They regard the operation as indicated for this condition even in the absence of splenomegaly or any other clinical sign directing attention to the spleen.

In both of the authors' cases the purpura was of the chronic type associated with menstrual paroxysms. The factors responsible were changes in the spleen so slight that they were not perceptible on clinical examination. This is in agreement with the observations made by others in cases of hæmolytic and other anæmias not associated with splenomegaly.

Before advising splenectomy the surgeon must be sure that the condition is not a secondary purpura and that the hæmorrhage is dangerous.

In the authors' first case the operation gave an excellent result which has been maintained for four years. In the second case it is still too early to judge the end result.

W. A. BRENNAN

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Pfahler G E The Study of the Sternum by the Roentgen Rays *Am J Roentgenol Radiol Ther* 1942 311

In Pfahler's opinion disease of the sternum is more common than is generally believed. Examination of the sternum with the roentgen rays in every case in which there is any suggestion of sternal disease would increase the number of known cases. Prominence of the sternum noted on physical examination should always arouse suspicion. Pfahler has found that metastatic carcinoma of the sternum secondary to carcinoma of the breast is not rare.

Tuberculosis, pressure necrosis, and traumatic lesions have also been noted. The pathological findings do not differ from those in analogous lesions of other bones.

The examination should be both roentgenoscopic and roentgenographic. Fluoroscopy will aid in determining the best angle at which to make the exposures in the two oblique planes. Roentgenograms should be made with the patient standing in the right and the left oblique positions and in a true lateral position. The last is probably the most important.

The article is supplemented by numerous illustrations of the various lesions of the sternum as revealed by the roentgen ray.

CHARLES H. HIRACOCK, M.D.

Stenstrom W Dose One and Two Centimeter and the Skin from Unfiltered X-rays *J Can Res* 1942 418

In the treatment of skin diseases with unfiltered rays it is often desirable to give the lesion from two to three times the erythema dose and the question arises as to how deep the reaction penetrates. Believing that the measurements obtained with ionization chambers or photographic films and absorption materials are not apt to be proportional to the effect in the tissues the author decided to use the erythema produced on the skin as a standard for such measurements.

Two experiments with patients were carried out. Five circular fields 2 cm. in diameter were exposed to different amounts of radiation without and with 1 or 2 cm. of paraffin superimposed. The results are given in tables.

The first experiment demonstrated that the depth dose is heavier than had been suspected. In the second smaller doses were used. Although the estimation of the degree of the erythema from the color was somewhat arbitrary it was possible to conclude from the two experiments that at a depth of 1 cm. the dose was more than 50 per cent and

less than 60 per cent of the skin dose and that at a depth of 2 cm. it lay between 25 per cent and 35 per cent. The probable values at a depth of 1 and 2 cm. are 54 per cent and 32 per cent of the skin dose.

ADOLPH HARTUNG, M.D.

Webb J C Some Experiences in and Considerations of Deep X-Ray Therapy *Br J Med* 1942 162

In Continental Europe and the British Isles there are considerably more than 1,200 deep therapy X-ray installations. One hundred and thirty are in the British Isles. From this the author concludes (1) that the medical world at large considers the value of deep X-ray therapy in malignant disease as proved, and (2) that Britain is behind the rest of the world in studying and using it.

Webb's experience is limited to eighteen months and while this period of observation is brief, he is greatly impressed by the palliative relief, especially the relief from pain, in the hopeless cases.

In conclusion Webb states that the roentgenologist knows something of surgery and medicine and the surgeon and physician whose province it is to advise roentgenotherapy should know something of the development and potentialities of this modern science.

CHARLES H. HIRACOCK, M.D.

Hilly L The Present Status of Intensive High Voltage Radiation Therapy of Cancer *J R Soc Med* 1942 35

A brief review of the evolution of radiotherapy from the time of the discovery of the roentgen ray to date is followed by a more detailed description of the rational dosage technique and results obtained by numerous European workers in this field. Various opinions and statistics are quoted relative to the value of prophylactic exposures following operation for malignancies. An extensive bibliography is appended. The following conclusions are drawn: 1. A biopsy performed before radiation treatment is without harmful effects.

The roentgen rays do not directly kill cancer cells.

3. A standard carcinoma dose or sarcoma dose of roentgen rays cannot be established biologically.

4. There is no verifiable proof that insufficient rays stimulate tumor growth.

5. Six carcinomata of different types and degrees of malignancy which are not always distinguishable with the microscope, it is impossible that the same method of treatment and the same dose will produce the same result.

6. The coordination of the organ in general cannot be neglected in selecting indications for roentgen

ray therapy. Undernourished and cachectic persons are refractory to the roentgen ray.

7 From the evidence at hand there seems to be no reason why with increased distance filtration and time the old machines commonly used in America for therapy will not produce as good results as the high voltage apparatus introduced by the Germans.

8 Intense high voltage raying damages the normal tissues. Connective tissue damage breaks down the barriers to cancer cell invasion. Damage to the endocrine gland reduces the general resistance and by itself may lead to death.

ADOLPH H. RITTING, M.D.

### MISCELLANEOUS

Pack, G. T., Underhill, F. P., Epstein, J., and Kugelma, S. I. N. Experimental Studies in Electrolytic Medication. *A. J. M. S.* 924, 1927, 635.

The originator of the electro-ionic therapy was Stephen Leduc of Nantes. In one method of giving this treatment the arms or legs are immersed in solutions in contact with electrodes one of which solutions contains the drug to be introduced through the skin and the other a 1 per cent sodium chloride solution. In another method thick layers of lint saturated with the medicated solution are placed between the skin and one electrode and the other electrode is applied else where on the body. The negative or positive electrode is used with the drug according to whether the desired ion is the cation (negative) or the anion (positive). In experiments on rabbits the ears may be immersed in the solution. A 20 to 30 volt current of 2 or 3 ma. is used for varying periods of time.

Named in the order of decreasing resistance to electrical currents the tissue are bone, fat, tendon, skin, muscle, blood, and nerve. A moist skin is less resistant than a dry skin. The physicochemical effects of the electrical current on electrolytes (body tissues) are orientation and penetration of ion and electrolysis. The more extensive the ionization (in dilute solution) the greater the facility with which the current travels and the ions migrate. Metals high in the electromotive series displace inferiorly placed metals from their salts. Liquefaction occurs at the negative pole and coagulation at the positive pole. The latter is illustrated by the coagulation of blood on an aneurysm by electrolysis.

The author summarizes his findings as follows:

1. The electric current may be used as a means of driving ions into the skin. In this transfer various factors are involved such as the amperage used, the time of the application, the resistance of the tissues

and the migrational velocity and chemical nature of the entering ion.

As soon as the ions of the heavy metals such as  $Hg^{++}$ ,  $Mg^{++}$ ,  $Zn^{++}$ ,  $Pb^{++}$  enter the skin they give up their electrical charge to other much faster traveling ions present in the tissue such as  $H^+$  and  $Na^+$ . Having lost their charges the metal then enter into combination with the protein and salts of the tissues and may form precipitates. These precipitates are dissolved too slowly to be demonstrated in the excretions by the common chemical tests. Heavy metal may therefore be efficient for a local effect but not for a systemic effect.

2. The electric current facilitates the introduction of many alkaloids through the skin. In rabbits systemic effects of strychnine and pilocarpine were demonstrated after electrolytic administration of the drug for approximately one hour. Control without the current were negative. The action of caffeine and curare as gauged by systemic effects failed to be demonstrated in rabbits after electrolytic administration of the drug for approximately two hours. In frogs the action of curare, picrotoxin, strychnine, veratrin and nicotine was shown to be definitely accelerated when the drug was introduced into the skin electrolytically. Electrolytic experiments with local anesthetics in which a current of 2 ma. was used for ten minutes upon a human subject showed that cocaine produced moderate but incomplete anesthesia of the finger lasting about an hour; procaine and butyn produced mild anesthesia lasting about half an hour; and benzylcarbinol and salicin failed to produce any appreciable anesthesia.

3. Halogen, non-metal and acids being anions are introduced by anaphoresis. The ingress of some of them is demonstrably accelerated by the electrical current ( $CN^-$ ,  $I^-$ ) while that of others ( $NO_2^-$ , salicylates) is not affected.

4. The theory of detoxication of poisonous ions by electrolysis is fallacious. The application of an electrical current is not specific for the egress of particular ion except those with a relatively great migrational velocity ( $H^+$ ,  $Na^+$ ,  $Cl^-$ ,  $I^-$ ). The migrational velocity of the ions of the common poisons is very small as compared with that of the ions normally present in the tissues. Therefore the principle of detoxication cannot be applied to the former.

5. After the administration of iodides by mouth or subcutaneously nascent iodine can be liberated within the tissues by the insertion of a positive pole of an electrode. Possibly this principle may be utilized in the treatment of certain infections. However, equally beneficial effects seem to be obtainable from the application of the electric current itself as the result of the marked tissue changes produced.

WALTER C. BURKET, M.D.

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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 B. (N. Y.) 1917  
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## EDITOR'S COMMENT

**V**ARIOUS phases of the cancer problem are considered in four exceptionally interesting reviews in this month's issue of the *ABSTRACT*. The parasitic theory of the origin of cancer is discussed in a carefully studied paper by Meyer (p. 339), the limits of deep X-ray therapy and operation in the treatment of malignant growths in general are defined by Höffelder (p. 336) on the basis of the results obtained in Schmieden's clinic in Frankfurt, the causes of failure following X-ray treatment of malignant tumors of the female genitalia are considered by Sippel and Jaechel (p. 337) in a résumé of the results obtained during the past eleven years in *Bumm's clinic*, and the subject of carcinoma of the esophagus is reviewed by Quick (p. 293) with reference to the diagnosis and management.

A number of abstracts concerned with the general subject of the blood and lymph systems are also worthy of particular attention. Lewisohn reviews the subject of blood transfusion by the citrate method on the basis of ten years' observations (p. 333). Walterhoefer and Schramm report the results obtained in the treatment of pernicious anemia by the removal of marrow from the long bones (p. 332), and Rothenthal and Baehr discuss the paradoxical shortening of the coagulation time of the blood following the intravenous injection of sodium citrate (p. 332).

The otologist will find a number of important abstracts in this month's issue relating particularly to his field of work. A symposium on sinus thrombosis presented before the Medical Society of the State of Pennsylvania (p. 275), a discussion by Chamberlin of Gradenigo's symptom complex (p. 280), a report by Mendel on the uses and value of acryflavine in aural surgery (p. 281), a résumé of methods and interpretation of fundamental tests of hearing by Sonnenschien (p. 279), a discussion of method of treating intracranial suppuration of otitic origin by Andrew (p. 282), and the report of a primary case of diphtheria of the middle ear by Keifer (p. 280) are some of the papers of particular interest.

**T**WO interesting abstracts—Speck, Liljedahl and Falk's observations on Fouchet's test (p. 303) and Graham Cole and Copher's report of X-ray visualization of the gall bladder following the intravenous injection of sodium tetrabromphenolphthalein (p. 303)—reflect the constant search for more accurate methods of pre-operative recognition of gall bladder pathology.

Three helpful papers embodying statistical studies are reviewed in this month's issue. Braach and Gould's report of the postoperative result in 1,041 cases of nephrolithiasis (p. 318), Fichel's study of puerperal sepsis in New York City and New York State (p. 314), and Bunzel's review of 465 cases of toxæmia of pregnancy (p. 317) involve such important subjects and such large numbers of cases as to admit of definite and well-founded conclusions.

A number of other abstracts of particular importance should be briefly mentioned. Lenche's report of forty-six cases of surgery of the pinal cord and its roots (p. 86) represents one feature of the important work of the Lyon Clinic. Guibal's discussion of the surgical treatment of chronic bronchial dilatation (p. 289) is another helpful contribution of French origin. Deaver's paper dealing with the treatment of chronic peptic ulcer (p. 292) represents the studied conclusions of years of surgical experience and attainment.

Gruber's careful description of the pathological anatomy of duodenal ulcer (p. 291) contained detailed information of very practical importance to the abdominal surgeon. Douglas well-considered discussion of subdiaphragmatic abscesses and accumulations of fluid (p. 304) based on a study of eleven cases, and Schwartz's description of the technique and results of extirpation of the transverse colon (p. 307) though touching subjects of less common interest are the more valuable by reason of the difficulty of finding accurate and detailed information concerning them in the sources at our command.

# INTERNATIONAL ABSTRACT OF SURGERY

OCTOBER 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

- D. Schweinitz G. E. Thrombosis of the Cavernous Sinus *Ill. J. Surg.* 1924 1:55  
Smith S. MacC. The Etiology and Diagnosis of Lateral Sinus Thrombosis *Ill. J. Surg.* 1924 1:55  
Day E. W. The Treatment of Lateral and Cavernous Sinus Thrombosis *Ill. J. Surg.* 1924 1:56

Dr. Schweinitz The cavernous sinus is a paired sinus which passes along the sides of the body of the sphenoid bone from the sphenoidal fissure in front to the apex of the petrous portion of the temporal bone behind. It is about 2 cm. in length and comes in close relationship to the internal carotid artery, the third and fourth cranial nerves, and the first division of the fifth and sixth cranial nerves.

Cavernous thrombosis is a comparatively rare condition. It is usually secondary to injury of the skull (traumatic type) or due to infections originating in the face, orbit, and accessory nasal sinuses, mouth, pharynx, neck, or ear. It may be septic or aseptic, unilateral or bilateral. The primary infection which is most commonly around the ear may be a very insignificant focus, such as a small pimple.

The symptoms are those of a septicæmia plus various ocular manifestations due to venous stasis and involvement of the ocular nerves. Increasing exophthalmos, oedema of the eyelids, protrusion of the nose, and the conjunctival and important sign, ptosis, strabismus, diplopia, and dilatation of the pupils may be present. The retinal veins are dilated and tortuous.

The diagnosis is made from a septic temperature, increased symptoms, exophthalmos, increasing facial oedema, anaesthesia of the cornea, and impairment of the motor nerves of the eye.

The condition must be differentiated from orbital cellulitis, erysipelas of the lid, and thrombophlebitis of the orbital veins.

**SUITU** As the plate of bone separating the lateral sinus and the interior of the skull from the middle ear and mastoid, thin a large percentage of intracranial lesions are secondary to ear disease. Because of the extensive intercommunications of the venous circulation of the brain, infection of one sinus can be readily conveyed to another.

A clot or thrombus produces marked symptoms only when it breaks down and forms pus.

Accurately diagnosis is often impossible especially in atypical cases. Given a case presenting rigors, a temperature which oscillates at regular intervals, localized pain and tenderness over the mastoid and missary vein and marked asthenia with a clear mentality and a positive blood culture, the diagnosis of lateral sinus thrombosis is complete. A history of previous or present aural disease is very important.

Exploratory puncture of the sinus cannot be entirely relied upon for diagnosis since in cases of partial obstruction it may be misleading. A craniotomy is of no value and lumbar puncture will help only in differentiating between meningitis and sinus thrombosis. Mental clearness is characteristic of cases of uncomplicated sinus thrombosis.

**DAY** The treatment of sinus thrombosis is usually surgical although cases have been reported in which spontaneous obliteration of the sinus occurred. It is not the thrombus that kills but the blood stream in fact on resulting from its disintegration. In every case of probable infection the lateral sinus should be exposed for inspection. The fact that the position of this sinus is subject to marked variations should be kept in mind. Injury to the sinus during exposure is usually due to nipping of the wall with the rongeur forceps. Such an accident is embarrassing but should not cause the abandonment of the operation as the hæmorrhage can usually be controlled while the operation proceeds.

If a thrombus is present the amount of involvement is determined and the clot removed, the hæmorrhage being first controlled as well as possible with a gauze plug introduced between the bone and

the sinus to obliterate the lumen. The jugular vein is then ligated in the upper carotid triangle on a level with the thyroid cartilage. If this vein is thrombosed it is ligated lower down in the neck. The earlier the diagnosis and operation the more successful are the results.

In cases of cavernous sinus thrombosis direct operative attempts on the sinus have been abandoned. Instead the primary focus of infection has been attacked in the sphenoidal or ethmoidal cell with the hope that the infection may be so light that a spontaneous cure will result.

CYRIL J. GLASPEL, M.D.

Moore C. A. *Radical C and Removal of a Large An Epithelial Multilocular Cystic Epithelial Tumor of the Jaw* *B. J. Ophth.* 1924 169

The authors report the case of a man from whose mouth a small tumor had been removed at the age of 30 years. After this operation there was no further trouble until fourteen years later when the jaw began to swell again. The authors removed an irregular nodular cystic mass through an incision below the jaw and excised the affected portion of the mandible. Intra-tracheal anesthesia was used. Subsequently the resulting scar tissue which contracted the floor of the mouth was removed, the raw surfaces being covered with Thiersch skin grafts held in place by dental compound and a splint. Later the fitting of the new jaw was done.

Microscopic examination showed the tumor to be an epithelial odontoma (a lamantinoma).

WILLIAM H. BRANK, M.D.

## EYE

Young C. *An Operation for Congenital Ptosis* *B. J. Ophth.* 1924 272

Young describes an original operation he performed in the case of a young woman with complete ptosis of the right eyelid due to absence of the levator palpebrae.

A general anesthetic was employed. The superior rectus muscle was exposed for about 1 cm. up to its fleshy belly. The eyelid was depressed with a strabismus hook, the upper lid everted, and the muscle freshened transversely with a scalpel where the upper edge of the tarsus crossed its belly. The upper edge of the tarsus was then exposed, exactly to the extent of the width of the muscle, and the entire width of the muscle firmly sutured to the tarsus by three silk sutures, one in the center and one at each edge of the muscle.

The sutures were left in place and the lid was not everted for a month for fear of loosening the attachments. A persistent flush lasted four months until a suture appeared. To prevent this Young suggests bringing the stitches through the outer surface of the lid and tying them over glass beads. In May, 1924, ten months after the operation, the functional and cosmetic result was excellent.

LYMAN A. COFFEY, M.D.

Young G. *A Surgical Method of Dealing with Keratoconus* *L. J. Ophth.* 1924 270

Young reports the case of a poorly nourished 17-year-old girl with bilateral keratoconus who during an attack of pneumonia, developed such a marked staphyloma of the left cornea that bursting was imminent.

To save the eyeball he performed the following operation:

The cornea was transfixed by four needles, two horizontal and two vertical, which entered the anterior chamber outside the base of the staphyloma and issued at a point symmetrically opposite. Each pair of needles was threaded with the ends of a silk suture so that when the two sutures were drawn through and tied they contracted the entire staphyloma like a pursestring. The staphyloma was then sliced off and atropin and a bandage were applied. The sutures were removed at the end of 2 days. There was little reaction. The patient was discharged at the end of a week. The cornea smoothed down and at the end of a month presented a regular spherical surface with a stellate loma at its center. Two months later an optical induction down and in was done. Subsequently it was a success with correction. "till later it was im- possible to with correction."

LYMAN A. COFFEY, M.D.

Decker J. C. *Cycloplegics in Refractive Errors of the Eye* *B. J. Ophth.* 1924 271

In the cases of adults Decker uses homatropin (5 gr. to the ounce) routinely. One drop is instilled in each eye every fifteen minutes until from 3 to 5 drops have been given, depending on the patient's age and refracting is done fifteen minutes after the installation of the last drop. After the examination has been made, 1 or 2 drops of eserine solution are given for safety and comfort and to shorten the period of disability.

The patient whose case is reported in this article was subjected to the regular routine examinations and examinations. At the end of five days he was still unable to read large print. Ten days later he was able to read the free use of eserine. The cycloplegic remained paralyzed. Two months later, after all forms of medication had been eliminated and all measures of general medication had been exhausted, there was still no improvement in the accommodation power. Finally the patient was given bifocal glasses and these proved entirely satisfactory.

Decker is unable to explain the paralysis.

L. L. MCCOY, M.D.

Joseph H. M. *Retinitis Pigmentosa (Pseudo-)* *Pac. J. Soc. Med. Sci. L.* 1924 1

When the patient, a woman 63 years of age, was first seen by the author she complained of headache. She had never noticed any defect of vision or any night blindness.

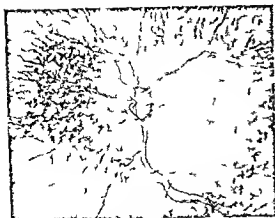


Fig. 16

The fundus shows the picture of retinitis pigmentosa and the fields an annular scotoma.

The vision is normal to Young's threshold test. Visual acuity right  $+25 = 6/9$ , left  $+25 = 6/9$ .

Imre J. Jr. On the Endocrine Origin of Primary Glaucoma. *A. A. Ophth.* 1914 11 5

Imre reports in detail eight cases of a group of thirty-one which in his opinion tend to prove that a very large percentage of primary glaucomata are based on constitutional anomalies. In twenty-seven of the thirty-one cases the endocrine system was disordered, one or more glands being degenerated or underdeveloped. After careful study, extract of the gland at fault was administered and in many of the cases it reduced the tension. When the endocrine system was normal, organotherapy had no effect.

V. H. Wescott, M.D.

Wilder W. H. Some Phases of the Glaucoma Problem. *M. J.* 1914 3 9 4 1 343

Wilder regards it as extremely difficult to make a definite assertion regarding the causes of glaucoma because in the examination of eyes that have been glaucomatous for some time there is always the question as to whether the findings are the cause or the effect of the disease.

The condition occurs most commonly in middle and late life, at a time when the lens grows larger, reducing the circumferential space and interfering with the outflow of fluid by pressure upon the root of the iris. The fibers of the pectinate ligaments are thickened and the lymph channels are contracted. Glaucoma rarely occurs in persons who are in good health.

In acute congestive glaucoma the diagnosis is usually not difficult but in the non-congestive form the occasional or constant increase in intra-ocular pressure, the cupping of the disk, and the degree of loss of central and peripheral vision must be borne in mind. The fields of vision should always be taken

by the same person and in approximately the same light and colors as well as form should be recorded accurately in order that comparisons may be made from time to time. Outlining of the blind spot and paracentral scotomata, both relative and absolute, is exceedingly important.

Operative procedures are necessary when, in spite of general treatment and the regular use of myotics, the records of the tonometer at times show increased tension, even though the increase is not great and the fields slowly contract or show enlarging scotomata with a possibly normal central vision.

THOMAS D. ALLEN, M.D.

Fuchs A. Changes of the Disk in Cases of Glaucoma. *Am. J. Ophth.* 1914 35 4 425

By means of excellent illustrations the author compares the disk in glaucoma with papillae which resemble them. Changes in the papilla are due mainly to (1) increased intra-ocular tension, (2) the condition and the position of the lamina cribrosa, and (3) rigidity and resistance of the corneosclera.

In many cases of glaucoma, ophthalmoscopic examinations are very inadequate. A thorough examination, especially of the blind spot, should be made by Bjerrum's method. In spite of increased tension the vision may not be totally abolished because occasionally a tension of from 30 to 35 mm. Hg after an operation for glaucoma may be borne for years without injury. The advisability of a second operation is determined by the visual fields rather than by the tonometric readings. L. L. McCov, M.D.

Verhoeff F. J. Cyclectomy, a New Operation for Glaucoma. *A. A. Ophth.* 1914 11 228

Verhoeff reduces the intra-ocular tension by excising a piece of the ciliary body through a scleral incision parallel with the limbus and 5 mm. from it and performing a buttonhole iridectomy. In only one of the cases reported was the result unsatisfactory.

The advisability of an operation involving removal of a part of the ciliary process must be questioned, but the author dispels this criticism by explaining that the part of the ciliary body directly affected by the operation contains little if any more uveal tissue per unit area than the iris, and the part remaining in the eye is less severely traumatized by an iridectomy than the iris.

V. H. Wescott, M.D.

Adler F. H., Landis E. M., and Jackson C. L. The Tonic Effect of the Sympathetic on the Ocular Blood Vessels. *A. A. Ophth.* 1914 11 239

The authors have demonstrated experimentally on animals that the intra-ocular pressure is increased when the blood pressure is raised. Thus sudden changes in the intra-ocular tension from sudden changes in the general blood pressure are prevented. When the cervical sympathetic is cut, the intra-ocular tension increases more rapidly with an increase in the blood pressure. Normally, therefore, the sympathetic exerts a protective action through a

local constriction of the ocular blood vessels. When the blood pressure was normal no effect on the intra-ocular tension was noted when the sympathetic was severed.

VIRGIN WESCOTT M D

McClintic C F Anatomical and Function I  
Relations of the Visual Apparatus to the Central Nervous System *Ch. of J M* 924  
6

McClintic correlates anatomical and physiological facts with certain clinical phenomena of the visual apparatus. The latter consists essentially of a focusing bulb, a retina or sensory ending, an optic tract and cerebral centers supported and subserved by various muscles, membranes and bones.

Tenon's capsule forms a bursa-like structure whose space drains lymph from about the eye into the subarachnoid space and connects with the capsule of the opposite side. The space is favorable for bacterial growth and its connections to a certain extent explain sympathetic ophthalmia.

Three groups of smooth muscles are associated with the eye externally: a group in Tenon's capsule, Mueller's muscle over the sphenoidal fissure and Mueller's muscle in the upper lid. The intrinsic muscles of the eye consist of the dilator and constrictor of the pupil and the ciliary body. The cells of the nerve fibers innervating these five muscles all lie in the nucleus of Edinger and Westphal, but the peripheral distribution of the fibers is quite diverse. For Tenon's capsule, Mueller's muscles and the dilator fibers the approach is by way of the sympathetic with a synapse in the superior cervical ganglion. For the constrictor of the pupil and the ciliary body the approach is through the oculomotor nerve with a synapse in the ciliary ganglion.

The extrinsic eye muscles may be arranged in functional pairs: (1) the medial and lateral recti; (2) the superior rectus and inferior oblique; (3) the inferior rectus and superior oblique. Close nuclear association is noted between the innervation of these pairs. The oculomotor nucleus contains cells of fibers innervating the superior and inferior recti, the inferior oblique and the levator palpebræ superioris. The trochlear nucleus sends its fibers to the superior oblique while the abducens nucleus sends fibers to both medial and lateral recti, the former by way of the oculomotor nerve. For the orbicularis oculi the cells lie in the oculomotor nucleus although the fibers are distributed by way of the facial nerve, a fact explaining the neurological fallacy of unilateral cerebral representation.

Disturbance of the neuromuscular mechanism may cause strabismus, pupillary change or a disturbance in accommodation depending upon the part damaged. Damage to the oculomotor nerve causes external strabismus associated with dropping of the upper lid, rotation of the eye, dilatation of the pupil, loss of accommodation and exophthalmos due to the unopposed forward push of Mueller's muscle and the muscle of Tenon's capsule. Injury to the fourth cranial nerve causes deflection in downward and out-

ward movements of the eye while injury to the sixth cranial nerve causes internal strabismus.

The Argyll Robertson pupil is due to a lesion in the superior colliculus since injury to either of the other two relay centers, the thalamus and the lateral geniculate body, would cause visual disturbance. Accommodation being a purposive act has a cortical center probably with the converging center in the frontal area and impulses may still reach the third nucleus from here.

Forward bulging of the eye may be due to paresis or paralysis of the extrinsic muscles which tend to hold it back or to hypertonicity of the smooth muscle of Tenon's capsule and Mueller's muscle. Since the superior cervical ganglion contains the synapse for fibers to these smooth muscles the rationale of extirpation of the ganglion for exophthalmos is apparent.

Various association paths make for correlated movements and account for certain pathological signs. The medial longitudinal fasciculus associates visual centers with motor nerve centers for muscles of the neck while the tectopontine tract connects visual centers with motor nerve centers of the trunk making for an equilibratory function of the visual apparatus and explains the pathologic of Romberg's sign.

Close connections between the visual relay center and the vomiting center account for certain cases of tinnitus sickness while similar connections with vestibular centers explain vestibular nystagmus.

In the retina the rods outside the fovea are so arranged that many rods connect with a single bipolar cell providing for augmentation of visual stimuli while in the fovea the cones connect singly with one or more bipolar cells making for acuity of vision.

Dilatation of the pupil in early pulmonary disease may be explained on a basis similar to the ciliospinal reflex.

The trigeminal nerve supplies sensory innervation to the eye (outside of the retina). Headaches of orbital pain and neuralgia may be due to referred pain from sinus infections, impacted molars, alveolar abscesses, etc.

M L MASOV M D

Finnoff W C Changes in the Eyes of Rabbits  
Following the Injection of Dead Tubercle  
Bacilli into the Common Carotid Artery *Am  
J Ophth* 924 3 365

Finnoff found that dead tubercle bacilli are capable of producing in animals ocular lesions which are similar clinically to those occurring after the injection of living bacilli into the arterial circulation but slightly different in their microscopic picture and essentially different in their progress. Living bacilli produce severe and progressive lesions in the eye in addition to pulmonary tuberculosis from which the animal dies before the eye lesions run their full course. Dead bacilli produce ocular lesions which progress to a certain stage persist for a variable length of time and then gradually disappear leaving scars. The ocular lesions produced by dead bacilli were

1 Contraction of the pupil occurring before the third day

2 Diffuse iritis on the second or third day This was mild and gradually subsided

3 Rigid iritis which appeared on the fourth or fifth day and was characterized by an irregular radiating thickening of the iris stroma without caseation This gradually subsided

4 Tuberculous nodules on the iris The e were usually multiple They appeared between the fourth and fourteenth day At first they were brown but soon they became yellow and showed blood vessels on their surfaces

5 Atrophy This followed all types of iritis but was most common after the nodular form It appeared after the third week

6 Early and late changes in the cornea The early changes consisted in vascularity and haziness or complete opacity The late changes consisted in deposits infiltrates and sclerosing keratitis

7 Conjunctivitis This was moderate in most cases and gradually subsided in a week or ten days

8 Tubercles of the lids These occurred ten times and usually at the margin Beginning as small nodules they gradually enlarged and finally ruptured and produced ulcers The ulcers healed in from seven days to one month and caused contraction and deformity of the lid

9 Changes in the choroid These were seen with the ophthalmoscope after the fourteenth day The tubercles began as faint round or oval yellowish areas which were poorly defined multiple and irregularly scattered over the fundus Gradually they increased in size became clearly defined and after from six to nine weeks changed to a dirty yellow color Pigment granules were deposited over tubercles In the center of the tubercular areas atrophic areas slowly appeared These became distinctly elevated (advanced caseation) Finally the atrophic area became glaucous white and excavated The average course of the choroidal lesion was fifteen weeks

10 Degeneration and disintegration of the retina in front of the tubercles In the terminal stage the entire choroid and retina were destroyed and replaced by scar tissue

11 Other lesions These which were seen only occasionally included detachment of the retina serous and cellular exudate in the vitreous tubercle of the optic nerve tubercle of the retina phthisis bulbi and panophthalmitis

None of the animals injected with dead bacilli died from the effects of the injection before the lesions were healed and several were living fifteen months after the inoculation L. L. McCord M.D.

Hilgarnier H. L. Parinaud Disease of the Eye  
J. M. 94 3

The author reports the case of a man who was struck in the eye by the tip of a cow's tail matted with cockle burrs Inflammation swelling and

ulceration of the conjunctiva were followed by swelling of the cervical glands The temperature was 101.3 degrees F Complete subsidence of the condition occurred in ninety days

Hilgarnier ascribes Parinaud's disease to (1) injury by a substance to which the organism is protein sensitive (2) the simultaneous introduction of an infectious agent which finds the activated tissues a favorable medium for growth and (3) the growth of the infecting agent in the lymphatic system  
THOMAS D. ALLEN M.D.

## EAR

Sonnenschein R. Methods and Interpretation of the Fundamental Tests of Hearing  
Ann. Ot. Rh. & Laryng. 1914 23:1

One of the most important purposes of functional tests of hearing is the localization of impairment of hearing The history of the case the pitch of the tinnitus the patient's occupation and the condition of the external ear the drum membrane the nasopharynx the nose and the pharynx must be determined

In middle ear involvement the low pitched tones are heard less distinctly than the high pitched tones i.e. the lower tone limit is elevated In a nerve lesion the high pitched sounds are heard less distinctly than the low pitched but if there is marked involvement both are heard poorly

With the Galton whistle and the monochord the highest tones in middle ear involvement are usually normal but in disease of the inner ear they are markedly reduced

In conduction impairment the Weber test is usually lateralized to the worse ear while in inner ear disease it is usually lateralized to the better ear

In middle ear disease the bone conduction is usually found lengthened while in inner ear disease it is usually shortened

With the Rinne test there is usually a negative reaction in disease of the middle ear and a positive reaction in disease of the inner ear

As a rule the drum membrane shows cloudiness loss of lustre thickening retraction or perforation in middle ear disease In otosclerosis the tympanic membrane is often normal or is pink over the region of the promontory In internal ear diseases the drum is usually normal but may show changes if there has been any middle ear disease at any time

JAMES C. BRASWELL M.D.

Kahn H. The X-Ray as an Adjunct for the Treatment of Partial Deafness. A Report of Technique  
Ann. Ot. Rh. & Laryng. 1924 33:1

As an adjuvant to the usual otological procedures in partial deafness the author recommends small X-ray doses to the ear regardless of the underlying pathology Improvement in hearing and a decrease in the tinnitus or its disappearance are usually prompt and permanent When a relapse

occurs hearing is again restored by a few additional radiations

The treatment advocated is applied after all the cautious accepted methods of otology have been used and is given whether or not hearing has been improved by them. The formula is as follows: stabilized milliamperes 8 kilovolts (root mean square) 50 (about 4 in spark gap) filter equivalent to 1 mm of aluminum distance 24 in time twelve seconds

MANFORD P. WAITZ, M.D.

Chamberlin W. B. The Gradenigo Symptom Complex. *Alta Med J* 1924 x 1 566

The Gradenigo syndrome consists of (1) a purulent otitis media (2) severe pain referred to the temporal and parietal regions on the affected side and explained by Gradenigo as due to involvement of the gasserian ganglion and (3) paralysis or paresis of the sixth or abducens nerve on the same side.

Gradenigo divides the cases into three groups:

1. Those with the typical syndrome and no other complication.

2. Those with the typical syndrome and in addition secondary symptoms such as second third or fourth nerve paralysis.

3. Those evidently of a virulent type which first present the classical syndrome but later develop meningitis with a fatal termination.

Chamberlin reports four cases two of which belong to the first group and one each to the second and third groups.

Three of the cases presented symptoms of paralysis of the external rectus before the mastoid operation and one presented them afterward. In all a profuse discharge of pus occurred during convalescence from the mastoid operation. Recovery resulted in three cases with complete recovery from the external rectus paralysis as well. The one patient who died was operated on during the incubation stage of a meningitis.

Gradenigo stated that the syndrome of clinical symptoms is the result of a circumscribed suppurative leptomeningitis localized about the tip of the pyramid and caused by the diffusion of the infection in the tympanum. The condition progresses along pre-existing anatomical paths. Perkins describes these paths as follows:

1. The infection may follow the *oblabyrinthine* route extending from the tympanum below the labyrinth and internal auditory meatus to the petrous tip.

2. From the mastoid antrum it may extend through the subarcuate fossa or petromastoid canal which passes inward beneath the superior semicircular canal and reach a layer of cells sometimes lying above the internal auditory meatus and thus arrive at the petrous tip.

3. Or this point may be arrived at by way of the carotid canal access to which is obtained either by eroding the bone on the anterior tympanic wall or through one of the carotic tympanic foramina

which give passage to the carotid branches of the tympanic plexus.

4. Finally the infection has been found in some autopsies to be through a layer of cells extending along the eustachian tube thus passing from the tympanum to the petrous tip.

The invulnerability of the sixth nerve is due to its exposure to the air. Its basilar portion is approximately 1 in long.

The paralysis is due probably to pressure produced by swelling or edema in Dorell's canal through which the nerve passes.

The pain is explained by the proximity and consequent involvement of the ganglion which lies in a depression on the anterior surface of the apex of the petrous portion of the temporal bone.

Because recovery has occurred in some cases in which the mastoid was not operated upon opinion is divided as to whether abducens paralysis in connection with purulent otitis media without other signs of mastoid abscess is an indication for mastoidectomy.

Werler and Maybaum are opposed to the performance of a mastoid operation in every case. Perkins also was opposed to it at first but in 1920 stated that he favored it. Chamberlin agrees with Lerker's present opinion.

Chamberlin concludes his article with the following statements:

1. The Gradenigo syndrome is sufficiently common to deserve the attention of every otologist.

2. The ophthalmologist should be continuously on his guard to see that external rectus paralysis of otitic origin is not mistaken for the more frequent forms of abducens paralysis with which he is more familiar.

3. In cases of sixth nerve paralysis associated with pain over the side of the head and a discharge from the ear an early if not an immediate mastoid operation should be done.

4. Although the mastoid operation with the free drainage it affords does not insure relief it is the best treatment known and lessens the dangers of intracranial involvement.

OTTO M. KERR, M.D.

K. Her C. F. Primary Diphtheria of the Middle Ear. *L. Y. J.* 1924 x 4 26

The author reports a case of primary diphtheria of the middle ear and reviews the literature on the subject. His case was that of a 7-year-old child with severe earache and tenderness of the mastoid. High fever (103.6 degrees F) rupture of the drum a dirty white pus discharge from the ear which gave a pure culture of diphtheria bacilli a high polymorphonuclear leucocytosis (49,600 80 per cent polymorphonuclears). From the drum perforation a whitish membrane protruded. The subcutaneous administration of 30,000 units of antitoxin and the dropping of antitoxin to the cornea every four hours caused the temperature and leucocyte count to return to normal decreased the discharge and resulted in the disappearance of the Klebsiella-Loeffler bacilli. No

cultures could be obtained at any time from the nose and throat

The author's conclusions are the following

1 Primary diphtheria of the middle ear is rare  
All suspicious dirty watery discharges from the ear should be examined microscopically

2 Antitoxin in large doses is always indicated  
For the average sized child not fewer than 30 000 units should be given in a period of twelve hours  
Nothing else will reduce the temperature and stop the discharge promptly  
The antitoxin may be instilled directly into the affected ear

3 The disease can be diagnosed positively only by a bacteriological examination of the discharge from the ear  
A biological test will differentiate the true Klebs-Loeffler bacilli from the false ones

How the disease invades the middle ear without throat and nose manifestations is a problem yet to be solved

MANTFORD R. WALTZ M.D.

Mendel J. H. *Acridine line and Neutral Acridine Their History and Use in Aural Surgery*  
Laryng. 2: 10 pp. 1924 1314 443

Acridine is a crystalline substance soluble in water and alcohol and incompatible with eusol Dakin's solution chlorine antiseptics and phenol  
It was synthetically developed by Ehrlich in his investigation of aniline dyes by the introduction of chlorine or a halogen into the acridin yellow group (which greatly increases the bactericidal activities of the group) and the subtraction of the methyl radicle  $CH_3$  (which has a tendency to decrease the germicidal properties of a group)

When Ehrlich's attention was turned to other matters the investigation was continued by Browning Kennaway Gulbranson and Thoroton of Glasgow  
These investigators stated that the ideal antiseptic must meet five requirements

1 It must exert great potency against microorganisms in the presence of protein materials or blood serum

2 It must not exert an inhibitory influence upon phagocytosis

3 It must not have an irritating action on living tissues in general

4 It must exert a suitable stimulating effect upon connective tissue cells

5 When absorbed it must not be highly toxic to any specialized tissue

On the basis of his experience with the drug Mendel believes it fulfills these requirements especially in the strength usually recommended 1:1000 in normal salt solution

The method used in connection with mastoid wounds consists in packing the newly made and dried cavity with gauze drains which have been dipped into a 1:1000 solution bringing the solution into contact with all surfaces placing a similar drain in the external canal and after cleaning drying and touching the sutures with iodine placing over the incision a solution saturated sponge cut to fit the aural

The points for and against the use of acridine may be summarized as follows

1 It is a bright yellow dye which stains everything with which it comes in contact  
With care however this objectionable feature can be overcome to a certain degree

2 Thirty days after their preparation the solutions begin to lose their potency and must be discarded

3 The dye is more effective against all microorganisms than any other known antiseptic

4 It is absolutely non irritating and non toxic and does not inhibit phagocytosis

5 It does not stimulate the growth of granulation tissue but it lessens pus keeps the wound unusually clean and prevents the formation of exuberant granulations thereby promoting rapid healing

6 It is a fairly effective deodorant

7 Stitch abscess is rare in cases in which it is used

8 It is of great value in otitis externa

MANTFORD R. WALTZ M.D.

## NOSE AND SINUSES

Cohen L. *Corrective Rhinoplasty Some Reasons for Faulty Results*  
A. Otol. Rh. L. & Laryng. 1: 1924 14 342

Corrective rhinoplasty should never be attempted unless the nose is free from infection  
In the author's opinion it should be done subcutaneously through incisions within the nose  
The graft should be touched only with the bone forceps  
If infection of the graft occurs external drainage is contra indicated as it will mar the cosmetic effect of the operation  
but if drainage can be established the graft may be saved  
The author uses a copper nasal splint to keep the graft in place until union occurs

In discussing with the patient the benefits to be expected from the operation other facial features must be taken into consideration  
Faulty occlusion of the teeth with malposition of the chin will detract from an excellent result obtained in the nose

JAMES C. BRASWELL M.D.

Hughes W. K. *Sinusitis in Children*  
Med. J. A. 1: 1924 5 pp. 38

Hughes discusses the frequency of sinusitis in children and the importance of the chronic form with polypoid degeneration of the antral mucosa without pus or mucus in the nose  
Most of his twenty seven cases were of this type and in all except one the tonsils and adenoids had been removed before the patient was first seen

The symptoms are usually general in character such as a constantly recurring cold persistant cough and headache but running and stuffiness of the nose asthma epistaxis bronchitis and otitis media are common

In this report only the antrum is considered  
The treatment requires the removal of all causes of nasal





bacterial activity evidenced by only light reddening (2) the type suggesting bacterial activity but not a clinically established infection and (3) the type in which infection is clinically established. Those of the first group are stimulated to activity by the X ray. Those of the second type are best treated with the X ray if any treatment is necessary. According to Jacini the third group are tonsils requiring surgery.

The author is of the opinion that X ray treatment is indicated in the following cases: (1) those in which operation is refused (2) cases of tonsils in the first two groups (3) cases of patients past middle life with an arteriosclerosis which might result in hemorrhage (4) cases of tonsils embedded in infected tissue in which operative removal may cause dissemination of infected emboli into the blood and lymph streams and (5) the cases of patients with chronic cardiac lesions, Bright's disease, diabetes, exophthalmic goiter, chorea, rheumatism, hemophilia, asthma, tuberculosis, status lymphaticus or any condition which has lowered the general resistance. Intensively decreased tonsils and those showing no improvement from X ray therapy should be removed.

The author's technique consists in treatments every week or ten days for eight treatments followed by observation for from six to eight weeks. In certain refractory cases subsequent rayings are given. The patient lies prone with the head turned sharply to the right or left and both sides are irradiated at each treatment. The central ray passes into the side of the neck just posterior to the angle of the jaw. No protection is used. The X ray formula is 5 ma at 100 kV, 10" (phere gap) and 30 cm focal point distance through 3 mm aluminum filter for five minutes with the use of a circular lead diaphragm opening 5 cm in diameter at 15 cm from the target.

MARION B. W. M.D.

## NECK

### Colle F. A. The Morbidity of Endemic Goiter *J. Am. M. A. 1914, 11, 4*

The most common form of goiter is a combination of colloid with adenomatous tissue between the two components changing stage. The same deficiency that causes the distention of the hyaline colloid may act also on the embryonic cell and on them to form new colloid which constitutes the adenomata. With the passage of time the hyaline element tends to decrease so that the goiter is a solid mass but the solid markedly but the adenomatous portion if present has increased in proportion usually in actual size.

The author analyzed 300 cases of adenomatous goiter with a basal metabolic rate within normal limits. The tables based on the findings seem to indicate definitely the presence of a toxic scar abnormality in 14 per cent of the cases and as a prognostic criterion the number of cases in the decade.

STANLEY J. E. M.D.

### Foss H. L. and Jackson J. A. The Relationship of Goiter to Mental Disorders *Am. J. M. Sc. 1914, CIV, 724*

Goiter is not especially common in the insane even in a goiterous district. Its incidence in the State Hospital for the Insane at Danville, Pennsylvania is only 3 per cent.

Conversely insanity is extremely rare among the large number of goiter patients applying for treatment in a general hospital in the same locality. In the latter there were no cases of true insanity among 800 patients studied and the only mental disturbance was a mild excitement or a slight and transient mania which occurred in two cases.

There is apparently no definite relationship between goiter and insanity and usually nothing to indicate thyroidectomy in the treatment of the insane patient suffering from goiter unless the condition causes pressure. However operation may be necessary if there are accompanying evidences of true hyperthyroidism but the latter condition is very rare. Hyperthyroidism and hypothyroidism are unusual in the adult goiter patients of the Pennsylvania hospitals for the insane; the majority of the goiters being the so-called multiple adenomatous forms unaccompanied by systemic disturbances.

ARTHUR L. SHREFFLER, M.D.

### Negus V. E. The Mechanism of the Larynx *L. 1914, C, 197*

After a study of the evolution of the larynx the author suggests that the impression gained from the literature that the larynx is the organ of voice and has been evolved to subserve this function is erroneous; its use for this purpose being a subsidiary of several functions.

The simple type of larynx is a valve designed to guard the entrance of the pulmonary air tract against the entrance of substances other than air. The arytenoids were evolved to assist in the active opening of the valve as the demand for air increased and the cricoid and thyroid cartilages were evolved to build up and strengthen the framework of the larynx. The many other functions, such as those subserving olfaction, circulation, phonation, etc., are taken on by higher forms. The primitive function of the epiglottis was one of olfaction since in connection with the soft palate it shuts off the air tract from the mouth. In subsequent stages it assumes other functions.

As the air requirement of animals varies the position, shape and size of the larynx vary. In animals calling for an extreme amount of oxidation the air tract is straightened and the air capacity of the opening of the larynx is increased by variation in the length of the arytenoids and the size of the larynx. The movements of the larynx itself also help to aid through these movements—opening of the glottis during inspiration and partial closure during expiration—the pulmonary and cardiac circulations are aided.

As the larynx changed from a primitive condition to one in which it is open continuously except during the act of deglutition various structures were modified to aid in this act. The epiglottis and ary epiglottic fold take part in the swallowing of liquid in that they help to form lateral food channels. However when a bolus of food passes they assist but little as in this process the entire musculature of the larynx is brought into play the glottis is closed the larynx is pulled up to the base of the tongue and out of the way as much as possible and the esophagus is opened by means of its attachment to the cartilages of Santorini.

Espulsion of foreign bodies from the air tract is brought about by the act of coughing or sneezing in which a forceful expiration is made with the glottis closed. Vomiting is preceded by air swallowing in which an inspiratory effort is made with the vocal

cords closed. Man and related animals with bill to adduct and abduct their fore limbs have vocal cords and ventricular bands but the stage of development of these has no relation to the vocal accomplishments.

The function of the cords is to produce positive and negative intrathoracic pressures by acting in the capacity of valves. They thus assist in the production of a rigid thoracic wall the condition under which adduction of the fore limbs can be best produced or the diaphragm can best perform its piston like action.

The author does not discuss the mechanism of phonation except to say that the evidence of comparative anatomy indicates that variations in the pitch of the voice are brought about by contractions and relaxation of the thyro arytenoid muscles.

MAXFORD R. WAITZ M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Halstead A. E. and Caylor H. D. The Repair of Dural and Brain Defects by Free Fat and Fascial Transplants *J Am M Ass* 9 4 1917 p 1337

Dural substitutes must be strong and unyielding and capable of forming a tight union with the surrounding dura. They must not coalesce with the brain or leptomeninges and they must be viable. Autoplastic substitutes are best. The most logical substitute is blood vessel wall but for autoplastic transplants the amount of this tissue available is too small. Many tissues have been tried—skin, periosteum, peritoneum, omentum, fat, foreign bodies, osteoperiosteal grafts, fascia, and combinations thereof. Most of these form adhesions and many of them are not viable. Skin is difficult to sterilize. Autoplastic grafts of fat, osteoperiosteal transplants obtained from the adjacent healthy skull and autoplastic grafts of fascia lata have given good results. The field must not be infected. The fascial transplant should be made one third larger than the defect to be closed. It is not always necessary to suture the graft. Fascia is strongly viable and although it is not well supplied with blood is not easily infected. It is anatomically similar to dura and is always available and easily secured.

The author reports four cases. In Case 1 in which there was a sarcoma of the skull and dura mater, dural repair was effected by means of free transplants of fascia and fat and the cranial defect closed with an osteoperiosteal transplant. In Case 2 a case of meningeal cyst following a compound comminuted skull fracture the cyst membrane was excised and the dural defect closed with a free graft of fascia and fat. Case 3 was a case of cyst of the brain in which the cyst cavity was opened and drained and then filled with fat and fascia. In Case 4 there was a compound comminuted depressed fracture of the skull. Five weeks after injury Jacksonian epilepsy began. Recovery followed the implantation of a fat and fascia graft. *WILLIAM J. MURPHY, M.D.*

Andrew F. Intracranial Suppuration of Otic Origin *M J J T* 1 1 1914 p 377

The author describes several helpful procedures in the management of extradural infection on secondary otitic suppuration. Contrary to general teaching he usually exposes the dura searching for an extradural abscess of otitic origin. This he does by obtaining good view of the tymen and inward over the petrous especially in cases in which headache has been present. When thrombosed sinus forms part of the wall of an abscess exposure is made to a point below the thrombus and bleeding

is controlled by packing. The thrombus is then raised out of the jugular bulb without ligation of the vein below.

Intradural infections both of the diffuse and of the localized type are best treated by prompt removal of the source of infection and relief of the subtentorial pressure.

Intracerebral abscesses are of two types: stalked and those at a distance. The treatment of both requires: (1) the prevention of meningeal infection; (2) the avoidance of manipulation that will produce oedema or bleeding within the cranium; and (3) the prevention of medullary compression. To prevent meningeal infection the abscess should be drained along its stalk whenever this is possible. The alternative is to turn down a small dural flap and wait for adhesions to form about the meninges. After the abscess has been found by probing through this wound all possible precautions should be taken to prevent the sudden escape of large amounts of pus. Probing of the brain through the unopened dura is associated with great danger of hæmorrhage and is therefore to be condemned.

When the patient is evidently dying of bulbar compression relief may be given by freely exposing the thin anterolateral cerebellar dura over the lateral sinus in its descending part and upper knee the exposure being carried well behind the posterior border. In the presence of a live labyrinth the author removes the bone anterior to the descending sinus as far forward as is possible with avoidance of the semicircular canals.

Frank intracranial infection from labyrinthine sepsis by way of the eighth nerve and the ductus endolymphaticus is a constant danger. When a rapidly suppurating mastoid prevents waiting for the labyrinthine infection to become walled off the author performs the widest possible labyrinthectomy.

WILLIAM P. VAN WAGENEN, M.D.

## SPINAL CORD AND ITS COVERINGS

Shaw R. C. A Study of Intractable Pain Relative to Rhizotomy and Spinal Section *B I J S* 1914 648

Several general inferences have been drawn by the author from a group of patients subjected to dorsal root section for intractable pain. In a number of cases posterior rhizotomy gave complete relief from pain on great alleviation but in many instances section of the cervicothoracic or thoracic posterior roots did not result in a loss of deep pressure sensation. In few cases there was a return of sensation in an anæsthetic area after the dorsal roots had been cut and in other cases the pain persisted after posterior root section though there was no retention

any type of sensation. The clinical facts therefore suggest the existence of another afferent pathway for pain impulse.

A review of the literature on the conduction of afferent and efferent impulses through the posterior and anterior spinal roots does not settle the point concerning the transmission of afferent impulses in the anterior roots. The author's experimental work tends to show that the anterior roots contain afferent fibers. Corroborative evidence is offered with regard to the presence in the cranial nerve of afferent fibers in the motor. An analogy is drawn between the latter and the anterior root although perhaps not fully.

The author discusses the effects that may be expected from a posterior rhizotomy upon a painful and unpleasant accompanying (1) asphyxia, (2) and (3) visceral conduction. With regard to the value of sympathectomy in the relief of pain, states that removal of the sympathetic fibers at a given level in the thorax cannot be expected to interfere with the sympathetic supply to the lower extremities since in all probability the fibers innervate the adjacent areas at the anterior sympathetic root.

There is the anterior root which Shaw believes carries afferent impulses from the viscera. He identifies as originating from the sympathetic trunk. This would again then function as a muscular nerve in the fibrillar white matter which an experimental evidence is controverted.

L. A. DE LIVER, M.D.

**Leriche.** Forty Six Cases of Surgery of the Thoracic and Spinal Root. (J. Chir. et Pl.) Vol. 1, 1914, p. 114.

In Leriche's series of 46 cases of thoracic and spinal root surgery, the author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery.

There were 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery.

In forty six cases of thoracic and spinal root surgery, the author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery.

two extralateral resections, one section of the anterior part of the lateral cord and one transverse myelotomy.

Relief of complex conditions was difficult. In three the relief was complete for a while, but partially returned at a new level after six or seven months. Leriche discards but temporarily discontinued the operation, but because of the intense suffering of the patients he has undertaken it again. In resection of the thoracic root due to the presence of the root were excellent if a sufficient number of roots were resected. In cases of local resection due to compression by a neoplasm, resection was great relief. When the symptoms are due to a section of the lateral roots in the anterior part of the thoracic spinal cord, a radical resection of the thoracic spinal cord is indicated. In cases of paralytic with sphincter disturbances, resection may be necessary. In cases of peripheral neuropathy, resection of the thoracic spinal cord is indicated. In cases of peripheral neuropathy, resection of the thoracic spinal cord is indicated. In cases of peripheral neuropathy, resection of the thoracic spinal cord is indicated.

The case of Leriche's is a case in which the relief of the thoracic and spinal root surgery was complete for a while, but partially returned at a new level after six or seven months.

In cases of thoracic and spinal root surgery, the author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery. The author reports on 46 cases of thoracic and spinal root surgery.

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opposite the painful point on the front of chest thence to the left shoulder and thence down the inner aspect of the left arm to the wrist or little finger.

Whatever conditions tend to stimulate the heart action or raise the blood pressure may lead to an attack of angina.

The absence of dyspnea in true angina suggests that heart muscle weakness is not a cause.

The favorable action of nitrate is practically diagnostic since in no other condition does this drug act with such a marked effect.

Permanent cures are rare but the patient rarely lies in the first attack. Death occurs very often with the signs of typical heart failure rather than those of angina.

The second form of angina pectoris which is rare though legitimate occurs from coronary embolism. The subject is usually a person who was previously well or has few signs of circulatory disease. The symptoms begin suddenly, equates rather than by minutes. Its termination is more apt to be atypical than that of the more common form of angina.

The possible sources of anginal pain are (1) pathological conditions of the heart muscle (2) diseases of the coronary arteries and (3) lesions of the proximal part of the aorta.

Conditions which tend to limit the heart output such as prolonged auricular fibrillation are inconsistent with anginal pain.

Three forms of coronary disease commonly associated with anginal pain are (1) embolism (2) chronic sclerosis or syphilitic narrowing of the vessels and (3) vasomotor spasm. Undoubtedly the first of these can produce very severe attacks of pain. Physiogenetically the arteries are direct outward extensions of the first portion of the aorta and like that vessel may be the starting point of the pain. That chronic sclerosis or syphilitic narrowing of the coronary vessels may be the cause of angina appears to the author doubtful. It is doubtful also whether vasomotor spasm of these arteries is a cause since the presence of vasomotor nerves in the heart has not been demonstrated. Adrenalin injected into the circulation produces a vasodilatation of the aorta and coronary arteries presumably through an increase in the arterial tension.

All of the peculiar features of angina pectoris are explained best by disease of the proximal portion of the aorta. Factors which cause greater filling of the aorta and increase the stress on its walls will give rise to pain so long as the heart is equal to the increased task.

Surgical intervention is justifiable in spite of its risks. Section of the depressor nerve of the heart, a branch of the vagus has given lasting relief from anginal attacks. The relative value of this operation as compared with section of the sympathetic trunk is yet to be determined.

WILLIAM P. VAUGHAN, M.D.

# SURGERY OF THE CHEST

## TRACHEA LUNGS AND PLEURA

Caussade G Rosenthal G and Surmont J A  
Case of Pulmonary Gangrene Treated by  
Tracheostomization (Un cas de gangrène pul-  
monaire traité par la trachéostomie) *Bull et  
Mém Soc Méd d'Alg de Pa* 924 35 31 470

The case reported was that of a 33 year-old man  
Eight and a half years before the patient was seen by  
the authors he began to have attacks of coughing  
associated with chills and the expectoration of thick  
sputum During a period of three years the condition  
progressed with periods of remission to a bilateral  
pulmonary gangrene complicating bronchiectasis  
During a period of eight years various treatments  
were tried without result—intratracheal injections  
of 5 ccm of 10 gomenol for ten days by the  
supraglottal route autogenous vaccine 30 ccm of  
anti gangrene serum for six consecutive days 20  
drops of tincture of garlic for sixteen consecutive  
days and 0.15 gm of arsenobenzol every four days  
for thirty days Pneumothorax was contra indicated  
because the lesion was bilateral The cough fetid  
expectoration and pain in the lower part of the right  
side of the chest increased and the general condition  
became extremely poor The syndrome included  
emaciation septice fever albuminuria weakness  
bronchiectasis edema of the legs loss of appetite pal-  
pitation of the heart a rapid pulse clubbing of the  
fingers and enlargement of the liver and spleen

Under local anesthesia tracheostomization with  
the introduction of an indwelling silver cannula re-  
sembling a tracheotomy tube was done in order to  
make it possible to introduce the drugs directly into  
the numerous bilateral bronchiectases and associated  
gangrenous cavities to maintain the gangrenous  
areas under the constant action of suitable drugs  
and to render unnecessary the repeated traumatism  
produced by supraglottic and intraglottic injections  
The small size of the cannula which was usually  
closed with a stopper left a sufficiently permeable  
trachea so that most of the discharge as expecto-  
rated by mouth

The trachea was always anesthetized for the in-  
jections by alternating successive injections of 2  
ccm of 2 per cent cocaine novocainized oil (1:40)  
or 1 to 5 per cent locain A dose of 36 ccm was  
sometimes divided into six injections given at inter-  
vals of from two to thirty minutes Often the trachea  
remained tolerant over the three minute periods  
without anesthetization Later it was found of ad-  
vantage to incorporate the anesthetic in the oil The  
various oils used in turn were gomenol viosform oil  
and lipiodol At first the quantity injected was 5 or  
6 ccm but during the last fifteen days it was varied  
from 20 to 40 ccm

The injections were made every two to four days  
They did not cause dyspnea marked tachypnea or  
hemoptysis Sometimes the oils were mixed for ex-  
ample one part viosform oil to three parts lipiodol  
X ray examination made immediately after an in-  
jection of 15 ccm of lipiodol revealed the oil in the  
bronchial dilations as small opaque islands At the  
end of forty-eight hours these had disappeared

The treatment was ultimately very well tolerated  
but in the beginning when the patient was emaci-  
ated it caused lassitude depression intense dia-  
phoresis and several four minute attacks of convul-  
sive coughing followed by abundant expectoration  
and vomiting especially when the cannula stopper  
was removed In time these phenomena ceased the  
fetid odor of the breath became less marked the  
foul sputum decreased from 900 to 250 ccm the  
fever fell the patient's weight increased the general  
condition improved and the bacterial flora of the  
sputum decreased Renal function was undisturbed  
The cannula was well endured and caused no ulceration  
Iodide of lipiodol was obtained in the urine and  
sputum eight hours after an injection

When the cannula was removed at the end of one  
month the benefits of the tracheostomization per-  
sisted for twelve days but the condition then again  
became poor and death occurred at the end of two  
months

At autopsy the upper two thirds of both lungs  
showed bronchiectatic cavities and general sclerosis  
The left lower lobe was hepatized green and speckled  
with black spots The base of the right lung con-  
tained friable black putrid material and one cavity  
the size of a nut The lung lobes were obliterated by  
adhesions There was no pleural effusion or tubercu-  
losis The right side of the heart was dilated The  
liver and spleen showed amyloid degeneration The  
opinion is expressed that the patient would have sur-  
vived longer if the tracheostomization had been con-  
tinued

In conclusion the authors state that the method  
should be tried in suitable cases It is indicated in  
cases of bilateral pulmonary bronchiectasis with  
sclerosis and cachexia in which the surfaces to be  
treated are accessible only by way of the trachea  
Only oil injections should be used

WALT R C BURKET MD

Guilbaud L The Surgical Treatment of Chronic  
Bronchial Dilatation Four Cases (Sur l'at-  
tente opératoire de la dilatation bronchique chro-  
nique) *Quair h ér ti ns pe so lte* *Bull et Mém Soc  
Méd d'Alg de Pa* 924 31 31

The operative procedures used in the treatment of  
bronchiectasis are (1) artificial pneumothorax for  
compression of the lung (2) pneumotomy for drain-



age of the cavities and (3) excision of the diseased lung tissue by lobectomy or pneumectomy.

The choice of operation depends upon the extent and site of the disease. A bilateral lesion is not suitable for operative treatment. A unilateral plurilobar lesion sometimes may be ameliorated but cannot be cured. In the unilobar forms especially those of the left lower lobe excellent results are obtained from operation.

The dilated bronchi are submerged in sclerotic tissue deprived of vitality, are covered by many layers of cells which are markedly changed by chronic inflammation and in many areas resemble psoriasis and are complicated by numerous diverticuli. Hence bronchiectasis is not curable by pressure or drainage. The common failure of operations other than complete extirpation by lobectomy is explained by the microscopic anatomy. Total lobectomy is indicated when the disease is limited to a single lower lobe. It is advisable also when only a part of a lobe is affected as it is much simpler and safer than partial resection. In bronchiectasis limited to the upper lobe where section is serious, Tuffier's procedure of stripping away the parietal pleura with permanent compression of the lung may be substituted. Because of the high mortality, pneumectomy of an entire diseased lung should be abandoned for palliative collapse therapy by pneumothorax or thoracoplasty.

Artificial pneumothorax is usually easy to establish and when the pleura is free compresses the lung to the depth. When the union is total or the lung adheres to the wall compression is not realizable. In suitable cases pneumothorax greatly ameliorates the disease, diminishes the expectoration, lowers the temperature and relieves the general condition. The insufflation must be repeated indefinitely at intervals of ten or twelve days because resorption of the nitrogen tends to re-expansion of the lung with return of the attacks. The author reports a case of left lower lobe bronchiectasis which was temporarily relieved by artificial pneumothorax but had a fatal termination when the insufflation was not maintained and the attacks returned.

Extrapleural thoracotomy (the procedure of Friedrich or Verbruch) collapses the lung permanently but less completely than pneumothorax and has a considerable mortality. It never cures the bronchiectasis but may ameliorate it. The author reports a case of bronchiectasis of the left lower lobe in which a Brauer-Friedrich subtotal thoracoplasty gave a negative result and death resulted from brain abscess.

Pneumotomy is suitable only for the drainage of large bronchial dilatations which are few in number and cause retention with sepsis or are complicated by abscess or gangrene. Only temporary amelioration results; prolonged drainage never leads to cicatrization of the pockets. If healing occurs the condition was simple abscess, not bronchiectasis. When the bronchiectases are numerous, small and alveolar with strictured outlet, pneumotomy is

fatal. The dangers of pneumotomy are hemorrhage, subcutaneous emphysema, and gangrene of the thoracic wall which becomes infected by the bronchiectatic organisms. The author reports a case in which pneumotomy performed for a middle right lobe bronchiectasis with three large cavities was followed by fatal massive gangrene of the chest wall.

Lobectomy for unilobar bronchiectasis may be done either in one stage (Lilienthal) or in two stages (Robinson). Lilienthal opens the entire seventh intercostal space and spreads the ribs with a necessary with paravertebral section of two or three ribs. He then frees the diseased lobe, ties the pedicle with silk, brings the ribs together and establishes dependent drainage. The dangers of lobectomy are secondary infection of the pleura and pericardium, loosening of the pedicle, leakage with hemorrhage, suffocating pneumothorax, shock, mediastinal emphysema and bronchopneumonia. In the author's opinion a two-stage lobectomy is more prudent. In the first or extrapleural stage performed under regional anesthesia the sixth, seventh, and eighth ribs are resected from below in the axillary line and the intercostal pedicles are ligated. The U-shaped flap is then replaced. Eight days later the second or intrapleural stage of the operation is performed.

Regional anesthesia is found to be sufficient. Most surgeons use a differential pressure apparatus with general anesthesia but this suppresses the cough reflex and increases the danger of asphyxia when the pus erupts into a large bronchus during the pleural incision or the freeing of the lobe. Tuffier, Kuestner, Duval, and others have reported deaths from asphyxia on the table. Therefore Gubal performs lobectomies under spinal anesthesia. The patient does not suffer the cough reflex is preserved so that from 150 to 200 gm of pus may be expelled at one time when the lobe is freed and shock is absent. The U-shaped flap is lifted the pleura is incised along the quadrilateral line of the rib resection the lobe is freed, adhesions of the healthy lung are protected or repaired if they are injured, the pedicle is clamped and the lobe is divided at a considerable distance from the clamp. The clamp becomes spontaneously detached and is removed about the ninth day. Lobectomy should never be done on a free pleura. Adhesions with the pleural infection and decrease the danger of mechanical disturbances and of pneumothorax with tension pneumonia. If adhesions are absent their formation should be stimulated by means of iodine and gauze and operation should be delayed eight days longer.

The author reports a case of left lower lobe lobectomy performed in two stages. Morphine and scopolamine were given and spinal anesthesia was induced with 15 ccm of novocaine introduced through the fourth lumbar interspinous space. With the patient lying on his right side the seventh, eighth, ninth, and tenth ribs were resected under the U-shaped incision. The patient maintained a good color and pulse rate, talked to the surgeon and after the operative dressing talked back to his room.

Today two year after the operation he has only a slight cough and occasional expectoration. The author regrets that he did not treat his two other cases of unilateral bronchiectasis by lobectomy.

WALTER C. BURLEY, M.D.

**Zadek I.** Combined Surgical Treatment of Pulmonary Tuberculosis. Section of the Phrenic Nerve and Pneumothorax (Zu kombinierter chirurgischer Behandlung der Lunge i. Verbinde mit Phrenicus- und Pneumothorax). *M. d. A.* 1931, 10, 4.

For the treatment of pulmonary tuberculosis the author recommends combining section of the phrenic nerve with pneumothorax or thoracoplasty. If excessive pressure is avoided as is now always the case, the paralyzed diaphragm does not relax; that is, does not sink when gas is injected and the lung is further compressed even when there is inspiratory or expiratory positive pressure in the pleural space and when there are band-like adhesions or not too extensive flat adhesions. On the right side the advance of the liver, a solid organ, tends to neutralize the effect while on the left side the stomach is relieved, whereas when pneumothorax is done alone gastric function is frequently compromised by the sinking of the diaphragm thus causing at least disagreeable sensations with loss of appetite.

When only a relation pneumothorax is possible on account of adhesions the effect may be a transitory or persistent lowering of the diaphragm on the repeated injection of gas. This may occur even when there are indurations or multiple flat adhesions or when the lung is suspended by apical and basal adhesions. It is particularly apt to be the case on the left side, especially when in the presence of adhesions in the region of the upper lobe, the pulmonary vesicle presses upon the diaphragm. Even in such cases, however, the influence of the partial pneumothorax on the further course of the disease is almost always distinctly favorable and the associated section of the phrenic nerve affords the free play which is so desirable as the mediastinum is protected against excessive pressure by relaxation of the diaphragm.

Since the author has been using the combined method of treatment he has seen no case of displacement of the mediastinum by the pneumothorax. The high position of the diaphragm usually results in a considerable diminution in the volume of the pleural space so that the amount of gas necessary for filling is always less than in simple pneumothorax. The paralysis of the phrenic nerve and consequent change in the expiration results in a decrease of the movement on the distended side with slower absorption of the gas introduced.

The author has used atmospheric air exclusively for many years. The intervals between injections may be from a quarter to a third longer than when pneumothorax alone is employed and the quantity of gas may be considerably diminished. The appearance of an exudate is much less frequent with the combined treatment than with simple pneumothorax.

The operation itself is slight and may always be carried out under local anesthesia. Its disadvantages when compared with its advantages are too slight to be worthy of consideration. The paralyzing of the diaphragm may be undertaken at any stage of the pneumothorax but in general it is best to section the phrenic nerve before establishing the pneumothorax.

In conclusion the author draws attention to the psychological and social aspects of the method. Many patients finding themselves unable to continue treatment by pneumothorax over the long period necessary, give it up too early with disastrous results. The combined treatment is less burdensome to those who have become able to take up an occupation as it necessitates less frequent interruption of their work. Moreover, if the patient continues the treatment the dangers attendant on too early expansion of the lung are lessened by the paralysis of the diaphragm which, once established, is permanent. CREITA (Z)

**Bronfin I. D.** Pitfalls in the Diagnosis of Primary Carcinoma of the Lung. *Col. r. d. M. d.* 1931, 155.

Cases of pulmonary malignancy are frequently admitted to sanatoria with the diagnosis of tuberculosis. From a review of the literature the conclusion is drawn that primary pulmonary carcinoma is increasing. This may be due to improved methods of diagnosis or to an increase in respiratory infections. That tuberculosis and pneumoconiosis are etiological factors in malignancy of the lung is questionable.

Grossly there are three types of pulmonary carcinoma: the nodular, the infiltrating and the milary. The most common symptoms are dyspnea, pain in the chest and blood-tinged sputum but these are vague. The physical findings are also in definite. The laboratory is of little aid in the diagnosis. Negative sputum examinations do not exclude tuberculosis. Typical cancer cells are rarely found. In the roentgenogram carcinoma produces a homogeneous shadow which are wedge-shaped with the apex pointing toward the hilum and surrounded by a hazy zone. The presence of scattered nodules of varying size in any part of the lung without a surrounding zone of inflammation indicates metastatic malignancy.

The author cites three cases which illustrate the more common errors in diagnosis. In the first which was diagnosed as aortic aneurysm, autopsy showed an adenocarcinoma in the upper lobe of the left lung. The second case was diagnosed as pulmonary tuberculosis. The third was a metastatic adenocarcinoma secondary to a cerebellopontile angle tumor which had been diagnosed as pulmonary tuberculosis.

The following conclusions are drawn:

1. Primary carcinoma of the lung is more common than is generally believed.
2. Any history of inflammatory condition may be an inciting factor.

3 Influenza may be a factor responsible for the increased incidence of the disease

4 There is no symptom or sign characteristic of the disease in the early stages

5 In doubtful cases malignancy should be suspected when distinct physical signs of pulmonary tuberculosis are absent

MERLE H HOON M.D.

Fraser J The Treatment of Empyema in Childhood  
Edinburgh J 1924 5 xxxi Tr Med  
Chir Soc Edinburgh 1925

The author reports upon seventy cases of acute empyema in children. The comparative rarity of empyema in childhood is indicated by the fact that the condition was found in only fifteen of every 1000 surgical cases in the series studied. The incidence of empyema following acute lung infections was as follows: after lobar pneumonia fifteen cases 21 per cent; after bronchopneumonia thirty eight cases 54 per cent; and after influenzal pneumonia seventeen cases 24 per cent.

The higher incidence of the condition following bronchopneumonia is explained by the facts that this type of pneumonia affects the debilitated child and that as the process is diffuse and the barriers are less complete than in the other types of pneumonia there is greater opportunity for the infection to extend to the surface and especially to the fissures where empyema usually begins.

Bacteriological study of the seventy cases reviewed revealed the pneumococcus in fifty three cases and the streptococcus in seventeen. The type of the infecting organism is intimately related to the ultimate prognosis as in the fifty three pneumococcus cases the average mortality was 6 per cent while in the seventeen streptococcus cases it was 24 per cent.

The treatment must be based on (1) the general condition (2) the type of infecting organism and (3) the presence or absence of adhesions between the visceral and parietal pleura. The presence of adhesions can usually be determined by X-ray examination but as in a certain group of cases this is inconclusive roentgenometer readings of the intrapleural tension are more satisfactory. Cases of empyema may be divided into (1) those in which the effusion is localized by surrounding adhesions and the organism usually present is the pneumococcus and (2) those in which the effusion is widely distributed because of the comparative absence of adhesions and the common infecting organism is the streptococcus. These two groups must be treated by different methods. In cases of Group 1 Fraser opens freely into the infected pleural cavity either by rib resection or by intercostal thoracotomy and effects thorough evacuation of the contents pus and fibrin. He then establishes closed drainage by introducing a small tube to the most dependent part of the cavity and closes the original wound completely. The end of the drainage tube is placed in a vessel containing a weak antiseptic solution. The advantages of this method are that it permits full exposure

of the cavity thorough cleansing of the interior free dependent drainage and gradual disappearance of the pneumothorax. The original wound usually heals by first intention. The drainage tube is kept in place for from fourteen to twenty-one days.

For cases of Group 2 without adhesions between the visceral and parietal pleura Fraser advises aspiration for four or five days until adhesions have formed. Previous to the formation of adhesions opening of the chest is attended with considerable danger of massive collapse. After the formation of adhesions the procedure and the after treatment are the same as in cases of Group 1. In conclusion the author states that he does not approve of the use of aniline dyes for the irrigation of serous cavities and that the use of hypochlorous acid on the Carrel-Dakin principle is not adaptable for the irrigation of empyema cavities in children.

SHIRLEY C LYON M.D.

#### ESOPHAGUS AND MEDIASTINUM

Souttar H S A Method of Intubating the Esophagus for Malignant Stricture  
Brit J 1941 81

In cases of oesophageal cancer dysphagia is an indication for immediate intubation as it may be followed suddenly by total obstruction. The author has successfully treated several cases in which total obstruction of liquids had been present for three or four days. As the metastasis of oesophageal cancer occurs slowly and late Souttar considers obstruction the most dangerous factor until the growth perforates the mediastinum the pleura a bronchus or a large blood vessel.

To relieve obstruction with its fatal consequences a flexible metal tube is inserted through the stricture to cannalize or intubate the obstruction. This tube is a close spiral of German silver wire expanded at the upper end. It is extremely flexible incompressible and very light and occupies little space. Food does not adhere to it and if it is gilded, the metal does not turn black. It is made in three sizes. The largest is 3 in long by 10 mm in diameter and the smallest 2 1/4 in long by 6 mm in diameter.

The tube is inserted through the oesophagoscope after the stricture has been dilated slowly to 8 or 10 mm by means of bougies. A small bougie passed through the stricture serves as a guide for the insertion of the tube of proper size. The position of the tube is verified immediately by means of the oesophagoscope and later by means of the X-ray. A slightly bent tube may be placed in a cardiac stricture but the stomach will expel a straight tube from the card or orifice.

The tube is well retained does not cause ulceration of the oesophageal wall and may be left in place indefinitely. If it becomes displaced it may be replaced readily. The patient is not conscious of its presence is able to swallow properly masticated food rapidly regains strength and general health and is completely relieved of disturbances caused by

obstruction. A patient admitted to the hospital *in extremis* was discharged forty eight hours after intubation able to swallow easily and appearing much better.

The results of this treatment have far exceeded expectations. The author prefers the method of gastrostomy or the use of Symond's tubes or Hill's probe to maintain the lumen of a dilated stricture.

WALTER C. BURKET M.D.

Quick D. S. *Some Considerations in the Treatment of Carcinoma of the Oesophagus*. *Am. J. R.* 18 of 1924 xi 383.

Up to the present time carcinoma of the oesophagus has been fatal in practically every case. The histologic type of the growth indicates that it is extremely resistant to every form of treatment even when it is situated in a most accessible location. Squamous cell carcinoma of the oesophagus is particularly formidable.

A diagnosis of malignant disease of the oesophagus is practically never made before the growth has extended beyond the oesophageal wall. The initial symptom is usually dysphagia. This is due either to constriction of the lumen by an infiltrating annular growth or to occlusion by a bulky papillary neoplasm.

Ewing calls attention to the anomalies of structure of the oesophageal mucosa and to the canals extending into the submucosa and even to the muscular coat which are due to incomplete separation of the oesophagus and trachea at an early stage of embryonic development. It is probable that the disease frequently originates in these canals and is well advanced before it produces constriction or surface ulceration of the mucosa.

The presence of dysphagia with or without any of the later symptoms (pain in the back, cough,

hæmoptysis, etc.) or the presence of the later symptoms even without dysphagia should be regarded as an indication for an immediate roentgen examination. If the roentgen examination suggests an obstruction the next step should be a direct examination with the oesophagoscope. If the obstruction is due to carcinoma the neoplasm can readily be recognized in the gross but a section should be taken for microscopic examination. Sometimes a smaller instrument can be passed through the stricture to determine its lower limit and its relations to the oesophageal wall throughout. If the obstruction is due to external pressure valuable information can be obtained as to its origin. The author has examined cases showing roentgen evidence of probable oesophageal carcinoma which proved ultimately to be an aneurism of the aorta, partial calcification of the aortic arch, a new growth of the substernal thyroid, an early mediastinal lymphosarcoma or cardiospasm. He has also taken sections from growths at the lower end of the oesophagus which proved to be adenocarcinoma, thus indicating that the oesophageal involvement was secondary to a primary gastric cancer.

The treatment of carcinoma of the oesophagus can be only palliative. The best results are obtained by combining an early gastrostomy by the Janeway method with external radiation given preferably with high voltage roentgen rays. The intra-oesophageal application of radium preferably in small repeated doses is indicated to control ulceration and local bleeding but has little influence on the progress of the disease. Heavier intra-oesophageal applications produce a severe local reaction with consequent swelling of the surrounding tissues and sometimes with sloughing which tends to increase rather than relieve the obstruction.

JOHN L. DIES M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Farr R E. Pneumoperitoneum as an Aid in the Diagnosis of Hernia. *J Am Uss* 1924 Lxx 14

Pneumoperitoneum, of value in rendering visible the contents of a hernial sac and showing their nature, reducibility, adherence, size and shape. It reveals also potential herniae that is patency of the funicular process without actual protrusion. The applicability of this procedure in industrial surgery is suggested. L M ZIMMERMAN MD

Cooke A. Lymphaticostomy in Peritonitis. *Br J* 1944 148

It has been suggested that opening and draining the thoracic duct may assist surgical measures in serious cases of general peritonitis. Costain went far to prove that the chief cause of the toxæmia in peritonitis is the flow of toxic lymph into the left subclavian vein. The author reports a case of general peritonitis following perforation of the appendix. The pre-operative diagnosis was acute abdomen. The small intestine was acutely inflamed and distended and a small amount of pus was found. The appendix was removed and the abdomen closed without drainage. The junction of the internal jugular with the left subclavian vein was then exposed and the thoracic duct isolated, ligated off from the vein stump and stitched to the skin.

On the first day after the operation the patient's condition was much worse. On the fourth day the distention was decreasing and there was a considerable discharge of chyle from the neck. On the eighth day the distention had disappeared. A discharge of pus from the abdominal wound was then followed by a sudden diminution in the discharge of chyle. The patient left the hospital on the twenty-fifth day after the operation, convalescent and with both wounds healed. CARL D. NICHOLS MD

## GASTRO INTESTINAL TRACT

Su R L W. Pyloric Hyperplasia in Hypertrophic Pyloric Stenosis. *Am J D Child* 1944 608

A number of investigators doubt the occurrence of an increase in the muscle layer in cases of hypertrophic pyloric stenosis in spite of the fact that macroscopic examination of the pylorus, accurate measurements of the diameter of the muscularis and cytologic study of the muscle cells and fibroblasts tend to prove the presence of hypertrophy in stenosis.

Sauer has attempted to furnish additional proof of hypertrophy. Wax models were prepared of the

musculature of the pylorus of two infants of the same sex, approximately the same birth weight and practically the same age at the time of death. A comparative study of these two wax models showed that the lumen of the normal control model was somewhat funnel shaped while that of the stenotic model resembled the letter V. The plane of the lumen of the control model was horizontal while that in the stenosis model was horizontal vertically and horizontally.

The fact that the wax model of the normal muscularis weighed 3.000 gm and that of the stenosis weighed 6.050 gm is regarded by the author as further evidence of a genuine and marked hypertrophy of the muscularis. JOHN W. NICHOLS MD

Wilderding H J. Tuberculosis of the Stomach. (*Ueber die tuberkulöse Erkrankung des Magens*) *Arch f Klin Chir* 1944 109

The author reports seven cases of tuberculosis of the stomach—one in which the condition was found at operation and six in which it was discovered at autopsy. The lesser curvature was affected in six cases and the fundus in one. Multiple lesions were found four times in some of these there were as many as twenty. In five cases the condition was of the ulcerative type and in two of the hypertrophic type. In none of the six in which it was discovered at autopsy was its presence suggested by the clinical picture. In one the diagnosis made during life was malignant pyloric stenosis with glandular metastases. The tuberculous nature of the disease was revealed only by microscopic examination.

To date ten similar cases have been reported in the literature. Since in a large number of cases of resection of the stomach a microscopic examination is omitted the author believes that some of the cases of supposed carcinoma of the pylorus in which resection gave excellent results were in reality cases of gastric tuberculosis. HELLER (Z)

Rendich R A and Connors J F. A Study of the Pressure Hour Glass or Cascade Stomach. Its Natural and Experimental Production with Case Report. *S G Gy et & Obst* 1944 xxx 77

The telescopic pressure hour glass and cascade have been applied to the gastric deformity in which the posterior wall of the pars cardica forms a definite pouch and becomes distended before the gastric contents descend to the lower pole and the rest of the stomach fills from the overflow of this pouch.

The pressure hour glass stomach causes a group of symptoms which are more characteristic than those of any other abnormality of the gastrointestinal tract. Complication is made of a sense of distress, the

lateral and posterior portion of the left hyperchondrium. In some cases this is described as pressure and in others as distention. The sensation is continuous for a time aggravated by constipation and relieved by the expulsion of flatus or the evacuation of colonic contents. It is due to the distention of the splenic flexure. After meal eructations and regurgitation of food are common and cardiac palpitation may occur.

The authors' experiments and investigations on the cause of cascade stomach indicate that the deformity is the result of retrogastric pressure which causes forward displacement of the mobile portion of the vertical arm of the stomach from the firmly fixed cardia. The source of such pressure is usually the distended splenic flexure. This condition occurs independently of any organic lesion of the alimentary tract.

Since the X-ray appearance of the gastric deformity simulates that of the true hour glass stomach and since the cause is pressure the term "pressure hour glass stomach" is suggested as most descriptive.

The condition represents a definite clinical entity. The treatment should be directed to the colon rather than the stomach. HOWARD A. MCKNIGHT, M.D.

Deaver J. B. Chronic Peptic Ulcer. *Bull. M. & S. J.* 1924. 76.

It is becoming more generally recognized that ulcer is due to more than one factor. A lesion of the stomach is far more serious than a lesion of the duodenum because it is less certain to be diagnosed; it has a greater tendency to undergo carcinomatous changes and it requires more complicated surgery for its radical treatment.

Virchow's theory attributing ulcer of the stomach to occlusion of one of the gastric arteries is proved incorrect by the free anastomosis of the artery which precludes the possibility of the formation of an embolus sufficient to cause the local anemia necessary for ulceration or erosion. Rokitsky was the chief advocate of the theory that ulcer is due to a disturbance in the venous circulation which favors intestinal hemorrhage, affects the mucosa and submucosa and produces an area of lessened resistance. The theories most generally accepted today are those attributing the lesion to infection and alteration of the gastric secretion.

The theory attributing the lesion to infection has been elaborated and convincingly proved by the research of Rosenow. Clinical experience has shown that there is a very large number of cases in which the focus responsible for an ulcer is situated in the appendix. Rosenow's demonstration of the elective affinity of streptococci is further confirmation of the infection theory.

It is probable that hyperacidity usually precedes the ulcer and prepares the tissues for the action of whatever secondary factors may be involved in the pathogenesis of the chronic lesion.

The outstanding symptoms of ulcer are a burning gnawing sticking or colicky pain which occurs at

rather regular intervals after meals, is always located in the epigastrium, often radiates and is frequently relieved by food or alkali. The relation of the pain to the ingestion of food may help in the localization of the lesion. According to Moynihan the sequence food comfort pain comfort means gastric ulcer while the sequence food comfort pain means duodenal ulcer. The former shows the quadruple and the latter the triple rhythm. The periodicity of the attacks and the state of well being between them are characteristic of peptic ulcer. A negative X-ray examination is not reliable when a positive history is given.

Gastric ulcer is more difficult to diagnose than duodenal ulcer. The chief symptoms and signs of gastric ulcer are pain, hæmatemesis and vomiting. In duodenal ulcer the blood lost is more apt to appear in the stools and hyperchlorhydria is more common. An ulcer that cannot be demonstrated at operation by touch and sight is not an ulcer.

Medical treatment cannot cure chronic ulcer. The reason is evident when an excised ulcer is inspected. Very often there is an associated appendicitis or cholecystitis which renders medical treatment even more impotent.

An unhealed ulcer is an irritant favoring cancer. In the Mayo Clinic 54 per cent of the cancers excised have developed on an ulcer base. The corresponding figure in the Lankenau Clinic, Philadelphia, is 30 per cent. Duodenal ulcer is less apt to be followed by malignancy than gastric ulcer but causes perforation in from 20 to 40 per cent of the cases and hemorrhage in 20 per cent.

The immediate conditions most dangerous to life in cases of ulcer are acute perforation, hemorrhage and subacute perforation. In very early cases of acute perforation the prognosis is good if operation is performed, but very unfavorable if operation is not performed. Hemorrhage is very serious and often rapidly fatal.

The surgical treatment depends upon the location of the ulcer, the patient's condition and the character of the ulcer. In cases of small non-adherent gastric ulcer upon the lesser curvature not far from the pylorus—the usual location of gastric ulcer—excision or cautery perforation with closure is usually sufficient. In cases of ulcer in the posterior wall the operation of choice is excision and closure through an anterior gastrotomy wound. If there is widespread induration on the anterior or posterior wall subtotal gastrectomy is preferable if the induration is near the pylorus, pyloroplasty is advisable.

For saddleback ulcer with or without hour glass deformity sleeve resection alone is done. When the ulcer is large and associated with wide induration Deaver does a subtotal gastrectomy with either closure of the proximal end of the stomach and a posterior gastroenterostomy or anastomosis of the open end of the stomach to the jejunum not far from the duodenojejunal junction, the jejunum being brought up over the great omentum and the trans-

verse colon as practiced by Moynihan. He prefers the no loop method to the long jejunal loop method.

Ulcer of the posterior wall of the stomach adherent to the pancreas is best treated by exposure through the inter-colo-epiploic route unless there is gastroptosis. When gastroptosis is present the route through the lesser peritoneal cavity may be chosen. In the treatment of this type of ulcer it is well to follow W. J. Mayo's method of bringing up a free portion of the great omentum and tucking a part of it between the stomach wound and the pancreas at the site where the ulcer was attached.

If there is practically complete pyloric obstruction posterior gastroenterostomy will suffice. It acquires stenosis in cases with a movable pylorus or a pylorus that can be safely mobilized. The Finney pyloroplasty is a splenic operation. Ulcers of the cardia if operated upon early can be excised but if the area of induration is large little in the way of surgery is possible.

In a case of small duodenal ulcer on the anterior or anterolateral wall excision or perforation with the cautery is advisable. In cases of large ulcers on the anterior or anterolateral wall and those of small ulcers on the posterior wall Dr. Dwyer does a posterior gastroenterostomy or amputates the duodenum below the site of induration removes the pylorus and performs a posterior gastroenterostomy. In the treatment of a large ulcer low down in the duodenum in close proximity to the pancreas he does a posterior gastroenterostomy.

The treatment of a gastroduodenal or marginal ulcer is dependent upon whether the pylorus is patulous or not. When the pylorus is occluded it has been removed the procedure of choice is excision of the gastroenterostomy opening anastomosis of the proximal and distal ends of the jejunum and a new gastroenterostomy or a Roux-Y operation. If a gastroduodenal fistula complicates the picture and the opening in the colon cannot be closed by simple suture resection of the affected part of the colon is indicated.

When the pylorus is patulous simple excision of the gastroenterostomy closure of the opening in the stomach and union of the proximal and distal ends of the jejunum are all that is necessary. In cases of jejunal ulcer excision or cauterization and closure of the opening are sufficient if the lesion is small but if the lesion is large and associated with induration resection is required.

The author does not perform a Billroth operation or a gastroduodenostomy. The Finney method he regards as too much surgery and is not entirely physiological.

In operations for ulcer such as formalin foci as a diseased gall bladder or appendix should be looked for and removed at the same time if possible. All extra abdominal foci should also be eliminated.

Surgery gives more cures than any other treatment. Recurrence of symptoms is very often due to lack of proper postoperative care. It is after operation that medical treatment has its greatest value.

Restriction of the diet should be continued according to the requirements of the particular case and should be determined by the surgeon and internist working together.  
CLAYTON T. ANDERSON, M.D.

Strauss, A. A.: Longitudinal Resection of the Lesser Curvature with Resection of the Pyloric Sphincter for a Trifid Ulcer. *J. Am. M. A.* 50:411-416.

After experimental resection of about one half of the pyloric muscle in a group of dogs the emptying time was found to be shortened from 35 to 45 per cent emptying occurred with less effort and peristaltic waves were shallower than before. Other types of pyloroplastics failed to shorten the emptying time.

At a later time longitudinal resection of the lesser curvature was performed. The emptying time was shortened from 30 to 35 per cent but was still from 20 to 30 per cent shorter than normal. The stomach contractions were normal but shallower and superficial waves were seen along the lesser curvature. Necropsy revealed an abundant blood supply to the lesser curvature, perfect healing and practically normal shape of the stomach.

In other animals the mucosa alone or the musculosa and musculans along the lesser curvature were removed. After this operation the emptying time did not differ from that following resection of the lesser curvature a fact which indicated that the contractions and emptying time are independent of extrinsic and intrinsic nerve control. Removal of all of the musculature of the pylorus and antrum was followed by interruption of the peristaltic waves and interference with the emptying of the stomach.

The surgical treatment of gastric ulcer is successful only if all pathologic conditions are removed and the stomach empties in a normal or shorter than normal time. Gastroenterostomy fails to meet the requirements. Mayo's resections (Billroth II or I operations) are objectionable because of their mortality and because they needlessly sacrifice from 35 to 85 per cent of the stomach. Simple excision of the ulcer with resection of the pyloric muscle does not remove sufficient tissue to prevent recurrence.

Ninety per cent of all ulcers occur on the posterior wall of the lesser curvature and longitudinal resection removes the ulcer-bearing area. If sphincter resection is a plastic operation on the anterior and posterior walls are done the emptying time is shortened below normal. The anatomical and physiological relations of the stomach and duodenum are maintained and shock and operative mortality are considerably less than following mass resection.

The author has performed twenty-one lesser curvature resections with no mortality or subsequent symptoms or complications. The first one was done eight years ago. The emptying time has remained from 25 to 35 per cent shorter than normal. To prevent narrowing of the stomach a plastic operation was performed a longitudinal incision being made in both walls and closed. Strauss considers these

verse colon as practiced by Moynihan. He prefers the no loop method to the long jejunal loop method.

Ulcer of the posterior wall of the stomach adherent to the pancreas is best treated by exposure through the inter-colo epiploic route unless there is gastropexia. When gastropexia is present the route through the lesser peritoneal cavity may be chosen. In the treatment of this type of ulcer it is well to follow W. J. Mayo's method of bringing up a free portion of the great omentum and tucking a part of it between the stomach wound and the pancreas at the site where the ulcer was attached.

If there is practically complete pyloric obstruction posterior gastro-enterostomy will suffice. For acquired stenosis in cases with a movable pylorus or a pylorus that can be safely mobilized the Finney pyloroplasty is a splendid operation. Ulcers of the cardia if operated upon early can be excised but if the area of induration is large little in the way of surgery is possible.

In a case of small duodenal ulcer on the anterior or anterolateral wall excision or perforation with the cautery is advisable. In cases of large ulcers on the anterior or anterolateral wall and those of small ulcers on the posterior wall Deaver does a posterior gastro-enterostomy or amputates the duodenum below the site of induration, removes the pylorus and performs a posterior gastro-enterostomy. In the treatment of a large ulcer low down in the duodenum in close proximity to the pancreas he does a posterior gastro-enterostomy.

The treatment of a gastrojejunal or marginal ulcer is dependent upon whether the pylorus is patulous or not. When the pylorus is occluded or has been removed the procedure of choice is excision of the gastro-enterostomy opening, anastomosis of the proximal and distal ends of the jejunum and a new gastro-enterostomy or a Roux Y operation. If a gastrojejuno-colic fistula complicates the picture and the opening in the colon cannot be closed by simple suture resection of the affected part of the colon is indicated.

When the pylorus is patulous simple excision of the gastro-enterostomy, closure of the opening in the stomach and union of the proximal and distal ends of the jejunum are all that is necessary. In cases of jejunal ulcer excision or cauterization and closure of the opening are sufficient if the lesion is small but if the lesion is large and associated with induration resection is required.

The author does not perform a Billroth operation or a gastroduodenostomy. The Finsterer method he regards as too much surgery and not entirely physiological.

In operations for ulcer such abdominal foci as a diseased gall bladder or appendix should be looked for and removed at the same time if possible. All extra abdominal foci should also be eliminated.

Surgery gives more cures than any other treatment. Recurrence of symptoms is very often due to lack of proper postoperative care. It is after operation that medical treatment has its great value.

Restriction of the diet should be continued according to the requirements of the particular case and should be determined by the surgeon and internist working together.  
CLAYTON F. ANDREWS, M.D.

Straus, A. A. Longitudinal Resection of the Lesser Curvature with Resection of the Pyloric Sphincter for Gastric Ulcer. *J. Am. M. A.* 1924, L X I, N 1765.

After experimental resection of about one half of the pyloric muscle in a group of dogs the emptying time was found to be shortened from 35 to 45 per cent emptying occurred without effort and peristaltic waves were shallower than before. Other types of pyloroplastics failed to shorten the emptying time.

At a later date longitudinal resection of the lesser curvature was performed. The emptying time was prolonged from 10 to 15 per cent but as still from 20 to 30 per cent shorter than normal. The stomach contractions were normal but shallow and superficial waves were seen along the lesser curvature. Necropsy revealed an abundant blood supply along the lesser curvature, perfect healing and practically normal shape of the stomach.

In other animals the mucosa alone or the mucosa and muscularis along the lesser curvature were removed. After this operation the emptying time did not differ from that following resection of the entire lesser curvature, a fact which indicated that the contractions and emptying time are independent of extrinsic and intrinsic nerve control. Removal of all of the musculature of the pylorus and antrum was followed by interruption of the peristaltic waves and interference with the emptying of the stomach.

The surgical treatment of gastric ulcer is successful only if all pathological conditions are removed and the stomach empties in a normal or shorter than normal time. Gastro-enterostomy fails to meet the requirements. Massive resections (Billroth II or Polya) are objectionable because of their mortality and because they needlessly sacrifice from 75 to 85 per cent of the stomach. Simple excision of the ulcer with resection of the pyloric muscle does not remove sufficient tissue to prevent recurrence.

Ninety-five per cent of all ulcers occur on the posterior wall of the lesser curvature and longitudinal resection removes the ulcer-bearing area. If sphincter resection and a plastic in the anterior and posterior walls are done the emptying time is shortened below normal. The anatomical and physiological relations of the stomach and duodenum are maintained and shock and operative mortality are considerably less than following massive resection.

The author has performed twenty-one lesser curvature resections with no mortality or subsequent symptoms or incapacities. The first one was done eight years ago. The emptying time has remained from 25 to 35 per cent shorter than normal. To prevent narrowing of the stomach a plastic was performed, a longitudinal incision being made in both walls and closed transversely. Stomach contents



wall (fascia pancreatica) to hemorrhage. The lesion may be round, oval or quadrate. Sometimes its longitudinal axis is horizontal.

Scar formation is a not infrequent occurrence, was described by Chvosek in 1883 and later by Hart. Hart found a scar in forty two of seventy two cases. Vusa found thirty two scars in twenty ulcers and Holzweissig eighteen scars in fifteen ulcers. Doubtless their discovery was due to very careful inspection of the mucous membrane and recognition of the fact that certain pocket formations (diverticula) represent cicatricial phenomena. In cases of diverticula of the duodenal wall a more or less distinct scar is found where the borders unite to form a sort of gable. The belief that the entire horizontal portion shows longitudinal folds (Schwarz and Holzweissig) is not correct as the horizontal folds usually begin from 2 to 3 cm. from the pylorus. The pocket formation is the result of reeling of the mucous membrane by the longitudinal folds and of pulsion exerted at the somewhat narrowed site by the horizontal folds. It is not caused by traction due to external inflammatory adhesions.

Only the superficial ulcers that penetrate no further than the submucosa heal quickly and completely. Those that penetrate deeper are always microscopically demonstrable. The processes are of the same nature as those in gastric ulcer except that healing gastric ulcers show deep glandular processes on their margins which are lacking in Brunner's glands in duodenal ulcer. This may explain the difference in the frequency of cancer on an ulcer basis in the stomach as compared with the duodenum. Cicatricial areas covered by mucous membrane are often seen near distinctly fresh ulcerations. These represent periods of healing which have been interrupted by the formation of new ulcerating lesions and are the histological expression of the clinical period of the condition.

True duodenal stenosis is very rare but a thickening of the pyloric musculature is often noted. The latter exerts a functional influence on the part of this region and may be the cause of the often considerable dilatation of the stomach. Perforation occurs about as often as in the stomach but cancerous degeneration is practically never found. The tendency of ulcers on the anterior wall to perforate led the earlier surgeons to believe that this was typical of duodenal ulcers. Perforation of ulcers on the posterior wall located either higher up or low and diagonally toward the front may occur with erosion of the blood vessels causing hemorrhage or blocking of the lumen by thrombi.

The origin and persistence of duodenal ulcers are dependent upon the same conditions as the origin and persistence of gastric ulcer. An important factor is a trophic injury of the mucous membrane and a constant factor is the gastric juice with its digestive action. No doubt cardiac and vascular changes play an important role since more than 50 per cent of persons with duodenal ulcer have endocarditis, myocarditis or atherosclerotic processes

or venous stasis of the internal organs. According to Hart lessening of circulatory compensation and conditions causing embolism and thrombosis are factors. The author does not agree with Hart that diseases of the brain and its membranes are of great importance in the development of acute peptic ulcer, neither has his experience confirmed Bergmann's view regarding the influence of tabes and lead poisoning. Doubtless erosions and ulcers may be caused by irritation through the nerve as well as by physical and chemical irritation.

Of the greatest importance are the extent, depth, breadth and localization of the lesion. While erosions and fresh ulcers heal readily in mucous membrane which is firm and strips easily because they are less exposed to peptic action, this is not the case with those less favorably situated. The constitution is of greater importance in the origin than in the persistence of the lesion. Curling's assertion that fresh ulcers very frequently follow extensive burns of the skin is supported by a number of cases.

In the author's opinion the time required for the formation of an ulcer need be no more than from a few hours to a few days, depending upon the time required for the digestion of the food which has been ingested. It is often difficult to judge the age of callous ulcers; callous ulcers are extremely rare in the duodenum.

The niche format seen in the roentgenogram is due in the author's opinion to inflammatory swelling of the mucous membrane on the margin of the ulcer. Histologically both the margin and the base of the ulcer are characterized by inflammatory processes. Peptic influence and inflammatory processes react upon each other. Askanazy regarded thrush as a pathogenic factor. The author believes with Aschoff and his school that important causes of the continued irritation of an ulcer are fixation of the mucous membrane and movement of the intestinal contents. However he is unable to accept the view that on expulsion the contents of the stomach strike the posterior wall of the duodenum and in so doing injure its mucous lining. He believes that recurrent waves are set up by the chyme which enters the duodenum in jets and that these waves are arrested at the posterior wall since at this point the mucous membrane is firmly attached to the underlying layers of tissue. Ulcers which extend in the pyloric eminence lead to thickening and spasm of the sphincter muscle or to insufficiency evidenced by complete stasis and movement of the first segment of the duodenum.

From the viewpoint of prognosis there is no important difference between duodenal and gastric ulcer.

Zurik (Z)

Gray H T. The Pathology and Symptoms of Duodenal Ulcer. *B M J* 1941; 1: 40.

The predisposition to duodenal ulcer consists in a relative increase in the normal vagus stimulation which establishes increased stomach activity. The outstanding cause is tobacco. Factors which ma-

vall (fascia pancreatica) to hæmorrhage. The lesion may be round oval or quadrilateral. Sometimes its longitudinal axis is horizontal.

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fifteen cases one death Quénu type eight cases no deaths He reports seventy four cases in which the mortality of exteriorization with late resection and exteriorization followed by immediate resection with the abdomen closed was 8 per cent Mikulicz operated upon thirty four cases by the latter method with four deaths

Cruet's statistics with regard to the remote results are as follows Bloch type of operation fifteen cases with two recoveries Mikulicz type fifteen cases with five recoveries Quénu type two cases with two recoveries

Three of the author's eight patients were still living three years or longer after the operation One of these three was lost sight of after the third year the two others were well four and five years respectively after the operation In one case there was a fatal recurrence after eighteen months One patient died with complications of small bowel fistula and recurrence ten months after the use of the enterotome Three patients treated before the war progressed well for three years sixteen months and seven months respectively

Besides the eight true exteriorizations the author has done four immediate resections Of three patients who had cancers so low that exteriorization was impossible one died of cancer within one year another was still alive two years after the operation and the third was lost sight of during the war In the fourth case in which partial obstruction had been present for eight days exteriorization was possible but the condition appeared so simple that resection of the intestine followed by immediate anastomosis was done The patient died after the operation In the author's opinion on this death would have been avoided if the true exteriorization method had been used

The formation of a preliminary fecal fistula may improve the general condition and relieve the thickened and inflamed gut wall which is distended with septic material above the obstructing mass

WALTER C BORKE M D

Coffey R C Principles of the Operation for Carcinoma of the Rectum *Surg Gynec & Obst* 94 22 15 73

Coffey's operation for carcinoma of the rectum is as follows

A straight right rectus incision is made extending above the umbilicus The loop of the sigmoid is lifted high up and the peritoneum of the mesentery is cut down by insinuating the blade of a pair of blunt scissors beneath the peritoneum but external to the vessels This incision goes down into the pelvis around in front of and at some distance from the rectum clipping the retrovesical fold near the bladder The left forefinger is then inserted through the mesentery where the peritoneum has been cut and with the ends of the forefinger and thumb directed backward the superior hemorrhoidal artery is felt This artery is ligated in two places The mesentery is severed and the sigmoid arteries are then ligated

All fat and connective tissue are scraped from the sacrum down to the coccyx and a large moist pack is placed back of the rectum

An incision for the colostomy is made 15 in. to the left of the median line and the proximal sigmoid after being severed is drawn through this incision and sutured to the peritoneum fascia and skin

A rectal tube is introduced into the sinus sewed to the distal gut and invaginated through the anus if possible

The abdominal lumen to the left of the emerging sigmoid is closed by a continuous lockstitch to the brim of the pelvis over a large quarantine drain which extends over the cut bowel to the sacrum completely isolating the lower segment of bowel The peritoneum is then closed around the drain and the wound is closed in the usual manner

About ten days later the rectum growth and anus are removed by perineal section made in the usual manner for resection of the coccyx and part of the sacrum By this time the bowel has become separated from the surrounding tissues by an area of necrosis due to lack of blood supply and can be helled out with the finger tips There is then a tract from the abdomen produced by the drain which is extraperitoneal and through which irrigating fluids may be poured The tract opening into the perineal region is allowed to close

The two stage operation described has a lower mortality and gives a higher percentage of cures than other methods

Howells M D

Kuemmell H Extirpation of the Rectum with Conservation of the Sphincter and without Resection of Bone (Rectum extirpatio cum m. E. h. sphincteris et b. ch. n. o. c. h. e. k. i. o. ) *Z. f. Chir.* 924 h 98

To remove the diseased rectum radically with conservation of the sphincter Kuemmell developed the following operation

With the patient in the lithotomy position the sphincter which has been closed with sutures is dissected out at a sufficient distance from the anal opening for about two thirds of its circumference The intact third is to the right of the operator The rectum is then dissected out an anal stump the width of at least three fingers being left connected with the musculature by a flap on the right side After its dissection the rectum is drawn down and severed and the anal portion is temporarily fixed to the right buttock and securely sutured The rectal work and excision of the sacral space can be done without resection of the coccyx The mobilized colon is drawn through the anus as usual Fastenings are done either after removal of the anal mucosa or into an incision around the anus by Kocher's method previously the centrally located anal ring was fastened to the drawn down colon After the plugging of a drain the cut sphincter muscles are sutured

This operation can be used in cases of carcinoma only if the anal portion is not affected and the growth is at a sufficient distance from it In eight

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The formation of a preliminary fecal fistula may improve the general condition and relieve the thickened and inflamed gut wall which is distended with septic material above the obstructing mass

WALTER C BURKET M.D.

Coffey R. C. Principles of the Operation for Carcinoma of the Rectum *S. & G. Oct 9 4 xx 73*

Coffey's operation for carcinoma of the rectum is as follows

A straight right rectus incision is made extending above the umbilicus The loop of the sigmoid is lifted high up and the peritoneum of the mesentery is cut down by an incision of the blade of a pair of blunt scissors beneath the peritoneum but external to the vessels The incision goes down into the pelvis around in front of and at some distance from the rectum clipping the retrovesical fold near the bladder The left forefinger is then inserted through the mesentery where the peritoneum has been cut and with the ends of the forefinger and thumb directed back and the superior hemorrhoidal artery is felt This artery is ligated in two places The mesentery is severed and the sigmoid arteries are then ligated

All fat and connective tissue are scraped from the sacrum down to the coccyx and a large moist pack is placed back of the rectum

An incision for the colostomy is made 15 cm to the left of the median line and the proximal sigmoid after being severed is drawn through this incision and sutured to the peritoneum fascia and skin.

A rectal tube is introduced into the anus sewed to the distal gut and invaginated through the anus if possible.

The abdominal lumen to the left of the emergent sigmoid is closed by a continuous lockstitch to the brim of the pelvis over a large quarantine drain which extends over the cut bowel to the sacrum completely isolating the lower segment of bowel The peritoneum is then closed around the drain and the wound is closed in the usual manner

About ten days later the rectum growth and anus are removed by perineal section made in the usual manner for resection of the coccyx and part of the sacrum By this time the bowel has become separated from the surrounding tissues by an area of necrosis due to lack of blood supply and can be helled out with the finger tips There is then a tract from the abdomen produced by the drain which is extraperitoneal and through which irrigating fluids may be poured This tract opens into the perineal region is allowed to close

The two stage operation described has a lower mortality and gives a higher percentage of cures than other methods

HOWARD A. McLAUGHLIN M.D.

Kuemmel H. H. Extirpation of the Rectum with Conservation of the Sphincter and without Resection of Bone (Rectumextirpation mit Erhaltung des Sphincters ohne Knochenresektion) *Zentralblatt f. Chir. 1924 4, 98*

To remove the diseased rectum radically with conservation of the sphincter Kuemmel developed the following operation

With the patient in the lithotomy position the sphincter which has been closed with sutures is dissected out at a sufficient distance from the anal opening for about two thirds of its circumference The intact third is to the right of the operator The rectum is then dissected out an anal stump the width of at least three fingers being left connected with the musculature by a flap on the right side After its dissection the rectum is drawn down and severed and the anal portion is temporarily fixed to the right buttock and securely covered The rectal work and excision of the sacral space can be done without resection of the coccyx The mobilized colon is drawn through the anus as usual Fastening is done either after removal of the anal mucosa or into an incision around the anus by Kocher's method previously the centrally located anal ring is fastened to the drawn down colon After the placing of a drain the cut sphincter muscles are sutured

This operation can be used in cases of carcinoma if the anal portion is not affected and the growth is at sufficient distance from it In eighteen

fifteen cases, one died with Quenu type eight cases, no deaths. He reports seventy-four cases in which the mortality of extirpation with his retractor and externalization is both well guarded and resection with the abdominal clamp was 8 per cent. Mikulicz reported up to thirty-four cases by the latter method with four deaths.

Cruet's statistics with regard to the remote results are as follows. Mikulicz type of operation fifteen cases with two recoveries. Mikulicz type fifteen cases with five recoveries. Quenu type ten cases with two recoveries.

Three of the author's eight patients were still living three or longer after the operation. One of these three was lost sight of after the third year; the two others were well four and five years respectively after the operation. In one case there was a fatal recurrence after thirteen months. One patient died with complications of small bowel intussusception ten months after the removal of the enterotomy. Three patients treated before the war progress well for three years, sixteen months, and six months respectively.

He states the eight results at operations the author has followed immediately thereafter. Of the patients who have been so long that externalization was impossible, one died of cancer within one year, another was still alive two years after the operation. The third was lost sight of during the war. In the fourth case, in which partial externalization had been present for eight days, externalization was possible but the colon appeared as a stump that receded into the intestine followed by some local anastomosis was done. The patient died after the operation. In the author's opinion, in this case, which has been said to be the externalization, the patient has been well.

The formation of a preliminary fecal fistula may improve the general condition and relieve the thickened and inflamed gut wall which is first noted with serous material above the obstructing mass.

WALTER C. BRYANT, M.D.

C. H. R. C. Principles of the Operation for Carcinoma of the Rectum. *Journal of the American Medical Association*, 1924, 35.

Coffey's operation for carcinoma of the rectum is as follows:

A straight right rectus incision is made extending up to the umbilicus. The loop of the sigmoid is lifted high up and the peritoneum of the mesentery is cut down by insinuating the blade of a pair of blunt scissors beneath the peritoneum but external to the vessel. This incision goes down into the pelvis around in front of and at some distance from the rectum, clamping the retrocolic fold near the bladder. The left forefinger is then inserted through the mesentery where the peritoneum has been cut and with the ends of the forefinger and thumb directed backward the superior hemorrhoidal artery is felt. This artery is ligated in two places. The mesentery is severed and the sigmoid arteries are then ligated.

All intestinal connective tissue is excised from the sacrum down to the coccyx and a large moist pack is placed back of the rectum.

An incision for the rectostomy is made in the left of the median line and the proximal sigmoid being severed is drawn through this incision and sutured to the peritoneum, fascia and skin.

A rectal tube is introduced into the anus, sewed to the distal gut and invaginated through the anus if possible.

The abdominal incision to the left of the emerging sigmoid is closed by a continuous lockstitch to the base of the pelvis over a large quantan drain which extends over the cut bowel to the sacrum, completing isolation of the segment of bowel. The peritoneum is then closed around the drain and the wound is closed in the usual manner.

At ten days later the rectum grows and anastomosis is secured by perineal section made in the usual manner for resection of the coccyx and part of the sacrum. By this time the bowel has become separated from the surrounding tissues by an area of necrosis and lack of blood supply and can be pulled out with the finger tips. There is then a tract formed in the abdominal wall by the drain which is extraperitoneal. The edge which rings the fistula may be pulled. The stricture is then the perineal region is allowed to close.

The two-stage operation described has a lower mortality and a higher percentage of cures than other methods. It was a V. H. I. T. M.D.

Kuemmell's Excision of the Rectum with Conservation of the Sphincter and without Resection of Bone (Rectum Intestation mit Erhalt. d. Sphinct. intern. ohne Knochenresektion). *Zeitschrift für Chirurgie*, 1924, 94.

To remove the excised rectum radically with conservation of the sphincter Kuemmell develops the following operation:

With the patient in the lithotomy position the sphincter which has been loosened with sutures is dissected out at sufficient distance from the anal opening for about two-thirds of its circumference. The intact third is to the right of the peritor. The rectum is then inserted into an anal stump the width of at least three fingers being left connected with the muscular ture by a tap on the right side. After its dissection the rectum is drawn down and severed and the anal portion is temporarily fixed to the buttock and securely covered. The rectal ork and excavation of the sacral space can be done without resection of the coccyx. The mobilized colon is drawn through the anus as usual. Fastening is done either after removal of the anal mucosa or into an incision around the anus by Koch's method previously the centrally located string was fastened to the drawn down of the anal flaps of a drain the cut sphincter muscles are sutured.

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fifteen cases one death. Quenu type eight cases no deaths. He reports seventy-five cases in which the mortality of externalization with late resection and externalization followed by immediate resection with the abdomen closed is higher than Mikulicz operated upon thirty-four cases by the latter method with four deaths.

Cruet's statistics with regard to the remote results are as follows: Bloch type of operation fifteen cases with two recoveries. Mikulicz type fifteen cases with five recoveries. Quenu type two cases with two recoveries.

Three of the author's eight patients were still living three years or longer after the operation. One of these three was lost sight of after the third year; the two others were well four and five years respectively after the operation. In one case there was a fatal relapse after eighteen months. One patient died with complications of small bowel fistula and recurrent ten months after the use of the external method. Three patients treated before the war progressed well for three years, sixteen months and six months respectively.

He cites the eight true externalizations of the author. One for immediate resections. Of three patients who had cancer so low that externalization was impossible, one died of cancer within one year, another was still alive two years after the operation and the third was kept right up to the war. In the fourth case in which partial externalization had been practiced in eight ways, externalization was possible but the condition appeared so simple that resection of the intestine followed by a moderate anastomosis was done. The patient died after the operation. In the author's opinion, this death would have been avoided if the true externalization method had been used.

The finalization of a preliminary externalization may improve the general condition of the thickened and inflamed gut wall which is distended with jejunal material above the obstructing mass.

WALTER C. BISSEL, M.D.

Coffey R. C. Principles of the Operation for Carcinoma of the Rectum. *Y. J. Clin. Oncol.* 1924, 1: 223.

Coffey's operation for carcinoma of the rectum is as follows:

A straight right incision is made ten inches above the umbilicus. The loop of the sigmoid is lifted high up and the peritoneum of the mesentery is cut close by inverting the blade of a pair of blunt scissors beneath the peritoneum but not near the vessels. This incision goes down into the pelvis around in front of and at some distance from the rectum, clipping the retrovesical fold near the bladder. The left finger is then inserted through the mesentery where the peritoneum has been cut and with the ends of the forefinger and thumb directed backward the superior hemorrhoidal artery is felt. This artery is ligated in two places. The mesentery is severed and the sigmoid artery is then ligated.

All fat and connective tissue are scraped from the sacrum down to the coccyx and a large moist pack is placed back of the rectum.

An incision for the colostomy is made five inches to the left of the median line and the proximal sigmoid after being severed is drawn through this incision and sutured to the peritoneum fascia and skin.

A catheter is introduced into the anus, sewed to the distal gut and invaginated through the anus if possible.

The abdominal lumen to the left of the emerging sigmoid is closed by a continuous suture to the brim of the pelvis over a large quadrant drain which extends over the cut bowel to the sacrum completely isolating the wet segment of bowel. The peritoneum is then closed at and the drain and the wound is closed in the usual manner.

About ten days later the rectum growth and anus are removed by perineal section made in the usual manner for resection of the coccyx and part of the sacrum. By this time the bowel has become separated from the surrounding tissues by an area of necrosis and is closed off from the upper and can be handled out with the fistula. There is then a tract from the distal meninges to the brain which is extraperitoneal and the ugh which irrigates the glands may be performed. This is a type of the perineal resection is closed to the rectum.

The two-stage operation described has a lower mortality than the higher percentage of ureters than other methods. It was a McK. J. H. M. D.

Kuennell H. K. The Operation of the Rectum with Conservation of the Sphincter and with the Resection of Bone (Resection of the Pelvis and the Pelvis). *Z. Chir.* 1924, 9: 41-43.

To remove the diseased rectum radically with conservation of the sphincter Kuennell developed the following operation.

With the patient in the lithotomy position the sphincter which has been closed with sutures is dissected out at a sufficient distance from the anal opening for about two thirds of its circumference. The intact third is to the right of the perineum. The rectum is then dissected out as an intact stump the width of at least three fingers being left connected with the mesocolon by a flap on the right side. After its dissection the rectum is severed and the anal portion is temporarily fixed to the right buttock and secured by a suture. The anal excision of the sacral plexus can be done with the resection of the rectum. The mobilized colon is drawn through the anus as usual. Fastening the distal end of the colon to the anal mucosa or into the colon is not the anus by Kocher's method. The colon is then placed in the anal ring was fastened to the drawn down colon. After the placing of a drain the cut sphincter muscles are sutured.

The operation can be used in cases of carcinoma only if the anal portion is not affected and the growth is at a sufficient distance from the right.

fifteen cases one death Quenu type eight cases no deaths. He reports twenty four cases in which the mortality of exteriorization with late resection and exteriorization follows. This immediate resection with the abdomen closed is as high as 80 per cent. Mikulicz operated upon thirty four cases by the latter method with four deaths.

Cruet's statistics with regard to the remote results are as follows. Bloch type of operation fifteen cases with two recoveries. Mikulicz type fifteen cases with five recoveries. Quenu type two cases with two recoveries.

Three of the author's eight patients were still living three years or longer after the operation. One of these three was lost sight of after the third year the two others were well four and five years respectively after the operation. In one case there was a fatal recurrence after eighteen months. One patient died with complications of small bowel fistula and recurrence ten months after the use of the enterotome. Three patients treated before the war progressed well for three years sixteen months and seven months respectively.

Besides the eight true exteriorizations the author has done four immediate resections. Of three patients who had cancers so low that exteriorization was impossible one died of cancer within one year another was still alive 10 years after the operation and the third was lost sight of during the war. In the fourth case in which partial obstruction had been present for eight days exteriorization was possible but the condition appeared so simple that resection of the intestine followed by immediate anastomosis was done. The patient died after the operation. In the author's opinion this third would have been avoided if the true exteriorization method had been used.

The formation of a preliminary fecal fistula may improve the general condition and relieve the thickened and inflamed gut wall which is distended with septic material above the obstructing mass.

WALTER C. BURKET, M.D.

Coffey R. C. Principles of the Operation for Carcinoma of the Rectum. *S. G. Cr. & Ob. J.* 1934 2 1133

Coffey's operation for carcinoma of the rectum is as follows:

A straight right rectal incision is made extending above the umbilicus. The loop of the sigmoid is lifted high up and the peritoneum of the mesentery is cut down by insinuating the blade of a pair of blunt scissors beneath the peritoneum but external to the vessels. The incision goes down into the pelvis around in front of and at some distance from the rectum clipping the retrovesical fold near the bladder. The left forefinger is then inserted through the mesentery where the peritoneum has been cut and with the ends of the forefinger and thumb directed backward the superior hemorrhoidal artery is felt. This artery is ligated in two places. The mesentery is severed and the sigmoid arteries are then ligated.

All fat and connective tissue are scraped from the sacrum down to the coccyx and a large moist pack is placed back of the rectum.

An incision for the colostomy is made 2 1/2 in. to the left of the median line and the proximal sigmoid after being severed is drawn through this incision and sutured to the peritoneum fascia and skin.

A rectal tube is introduced into the anus sewed to the distal gut and invaginated through the anus if possible.

The abdominal lumen to the left of the emerging sigmoid is closed by a continuous lockstitch to the brim of the pelvis over a large gauze drain which extends over the cut bowel to the sacrum completely isolating the lower segment of bowel. The peritoneum is then closed around the drain and the wound is closed in the usual manner.

About ten days later the rectum growth and anus are removed by perineal section made in the usual manner for resection of the coccyx and part of the sacrum. By this time the bowel has become separated from the surrounding tissues by an area of necrosis due to lack of blood supply and can be shell out with the finger tips. There is then a tract from the abdomen produced by the drain which is a trapezoidal anal through which irrigating fluids may be poured. The tract opening into the perineal region is allowed to close.

The two stage operation described has a lower mortality and gives a higher percentage of cure than other methods. JOHN AND M. McKEON, M.D.

Kuemmell H. Extirpation of the Rectum with Conservation of the Sphincter and without Resection of Bone (Rectum amputation mit Erhalt. d. Sphincters ohne Knochensektion). *Z. allg. Ch.* 1924 4 98

To remove the distal rectum radically with conservation of the sphincter Kuemmell developed the following operation:

With the patient in the lithotomy position the sphincter which has been closed by sutures is dissected out at sufficient distance from the anal opening for about two thirds of its circumference. The intact third is to the right of the operator. The rectum is then dissected out an anal strip the width of at least three fingers being left connected with the musculature by a flap on the right side.

After its dissection the rectum is drawn down and severed and the anal portion is temporarily fixed to the right buttock and is carefully covered. The rectal neck and excision of the sacral spine can be done without resection of the coccyx. The mobilized colon is drawn through the anus as usual. Fastening is done either after removal of the anal mucosa or into an incision around the anus by Kocher's method previously the centrally located anal ring was fastened to the drawn down colon. After the plugging of a drain the cut sphincter muscles are sutured.

This operation can be used in cases of carcinoma only if the anal portion is not affected and the growth is at a sufficient distance from it. In eighteen

of twenty cases in which it was used the functional result was perfect. In two only formed stools could be held; this was not the fault of the method but due to the location of the carcinoma.

VON TAPPEINER (7)

### LIVER GALL BLADDER PANCREAS AND SPLEEN

Spek F A, Liljedahl E N and Falk M A.  
Observations on the Fouchet Test in Latent Jaundice. *J Am Med Ass* 1944; 121: 2097.

Observations were made upon 500 patients. Both the macroscopic test for bile in the serum and the Fouchet test for an increase of bilirubin was made in all cases.

Of forty cases with proved gall bladder disease or gall stones in which there was no jaundice and the urine was negative for bile, twenty-seven gave a positive Fouchet test and in seventeen of these the serum was definitely bile tinged. The Fouchet test was positive in the cases of sixteen patients with gastric or duodenal ulcer, although none showed any evidence of gall bladder disease.

Of twenty-seven patients with syphilis, fourteen had a positive Fouchet test. In a few cases there were symptoms referable to the gastrointestinal system but these disappeared under antisyphilis treatment. Patients suffering from secondary anemia, angina pectoris, myocarditis and asthma showed an increased bilirubin content in the serum. An increase in the bile content of the serum could be detected macroscopically in 52 per cent of all cases showing a positive Fouchet test.

WELLS M J, PICKETT M D

Graham E A, Cole W H and Copher G H.  
Visualization of the Gall Bladder by the Sodium Salt of Tetrabromophenolphthalein. *J Am Med Ass* 1944; 121: 777.

For the production of X-ray shadows of the gall bladder the sodium salt of phenoltetrabromophthalein has been found more satisfactory than the calcium salt. It is more soluble, requiring only from 35 to 40 c cm of solution instead of the 350 c cm required by the calcium salt, and it is more stable. It does not crystallize out on sterilization and it produces a much less unpleasant reaction than the calcium salt often causing practically no discomfort.

The solution is given intravenously preferably in two doses. It is warmed to body temperature and given in the morning between 7:30 and 9:30 a clock. Care is used to prevent extravasation because of the danger of necrosis. The patient is instructed to omit breakfast and lunch and to take 40 gr of sodium bicarbonate every three hours for forty-eight hours. The roentgenograms are made at four, eight, twenty-four and thirty-two-hour intervals.

The normal gall bladder begins to cast a shadow from three and one-half to five hours after the injection on changes in size casts the heaviest shadow after from sixteen to twenty-four hours and empties

in about forty-eight hours. The largest shadows appear on the four and eight-hour plates. If the gall bladder fails to show this distensibility it is pathological. The pathological gall bladder casts a less dense shadow or may be entirely invisible. Stones appear as positive or negative shadows. In all cases a series of plates should be taken.

L M ZIMMERMAN M D

Deaer J B and Reimann S P.  
Cholecystostomy Versus Cholecystectomy. *J Am Med Ass* 1924; 121: 275.

Gall bladder cases may be divided clinically into those in which there has been only one attack or the attacks occurred only after a number of years and those with persistent infection. Recurrence in the first group is usually due to a new infection. Surgical treatment should be reserved for the second group and when indicated should be undertaken early. The immediate results of delay are gangrene and perforation and a more remote effect stone formation. Pericholecystic adhesions may protect against perforation but are a serious menace to good health.

There is considerable evidence indicating that the gall bladder does not increase the pressure of the bile above that which the liver can produce in secretion but it is known also that it concentrates the bile and adds mucus. Clinical experience has demonstrated that the body can get along as well without a gall bladder as with one and much better without a gall bladder than with a diseased one.

The authors advise the removal of the gall bladder which is apparently only slightly infected if there is reason to believe that it cannot regain its normal function. The gall bladder exhibiting little gross change may harbor within its walls serious infection which can be found on bacteriological examination. An infected gall bladder may continually re-infect itself or spread infection to surrounding structures.

The relative technical difficulty and greater risk of cholecystectomy as compared with cholecystostomy should not be the deciding factor in the choice of operation if a well-developed technique is used. In an occasional acute case primary drainage and secondary removal may be necessary.

WILLIAM J PICKETT M D

Henriques A.  
Some Probable Functions of the Spleen as Demonstrable by the Effects of Radio Activity Upon That Organ. *Arch Surg* 1941; 153: 4.

The effects of the application of radio activity to the spleen discussed in this article are: (1) relief of capillary hemorrhage, (2) increase in the hemoglobin, (3) increase in the red blood cells, (4) decrease in the white blood cells, (5) stimulation of immune bodies, (6) effects on other organs.

Irradiation of the spleen with a stimulating dose of the X-rays was found to increase the coagulability of the blood.



In cases of myelogenous leukemia both the hemoglobin and the red blood cells were markedly increased after treatment of the spleen with radium. The effect of radio-activity on the spleen is very marked when the white cell count is high. Irradiation may effect a reduction in the white cells from 800 000 to within 20 000 in a relatively short time. The leucocytes are especially susceptible to the action of radio activity anywhere in the body the lymphocytes most of all.

Experiments appear to show that antibodies are produced in the spleen lymphatic tissues and bone marrow.

Brief mention is made of the effects of radio activity upon a case of Banti's disease.

MORRIS H. KAHN M.D.

### MISCELLANEOUS

Walton H. J. Evagination of the Diaphragm  
*Am J R & T* 1921 XI 4

Borzell F. F. Report of a Case of Traumatic Hernia of the Diaphragm  
*Am J R & T* 1921 XI 426

WALTON gives a brief résumé of previously reported cases of evagination and differentiates the condition from hernia with which it is most commonly confused. His discussion is confined mainly to the roentgenological signs since these are of prime importance in the diagnosis. The chief roentgen findings are (1) high position of the diaphragmatic arch (2) a regular contour of the arched line (3) limitation of excursion (4) paradoxical movements on the affected side (5) mediastinal excursion from the affected side toward the sound side during inspiration (6) displacement of the heart to the right (7) a distinguishing line between the diaphragm and the viscera below it and (8) pneumoperitoneum.

The only roentgen sign pathognomonic of evagination of the diaphragm is separation of the arched line of the dome of the diaphragm from the viscera below. This is rendered most distinct by the introduction of a small amount of air into the peritoneal cavity. The patient may be examined in the upright or the lateral position. In evagination the abdominal viscera drop away from the diaphragm while in hernia the dome of the diaphragm cannot be isolated from the hernia above.

A detailed report of a case is appended.

BORZELL calls attention to the paucity prior to 1913 of reports of cases of diaphragmatic hernia diagnosed during life. Since 1913 the use of the roentgen ray has resulted in the discovery of many cases. Borzell gives the history of a case in which the condition was not found until several years after the accident. The roentgen findings are shown in illustrations and the operative procedure and its results are described.

In conclusion he calls attention to

1. The possibility of the presence of a traumatic hernia without marked clinical evidence.

2. The fact that it is important for the roentgenologist to carry his studies to a satisfactory conclusion

upon approaching every examination with an open mind uninfluenced by the history or clinical suggestions. If the diagnosis depends upon the roentgen ray the field examined must not be too limited.

ADOLPH HARTUNG M.D.

Douglas J. Subdiaphragmatic Abscess and Accumulations of Fluid  
*A S & G* 1921 LX 245

Anatomical conditions in the area below the dome of the diaphragm make the diagnosis of pus or fluid very difficult and complicate treatment. The ligaments of the liver (folds of the peritoneum) divide the subphrenic area into five spaces.

Abscess may occur as a pre-operative or post-operative lesion and is usually secondary to some perforative or infectious lesion of the abdominal viscera. The latter lesions are found as a rule on the right side.

An abscess spreading upward behind the colon from the appendix may reach the retroperitoneal space between the liver diaphragm and reflections of the coronary ligament. The lesion is entirely retroperitoneal and would not be evident if the abdomen were opened in front.

In the perforation of a viscus the diaphragm is usually pushed up by the resultant abscess. The liver is pushed down but may be displaced very little even when there is a considerable quantity of fluid and air between it and the diaphragm.

The diagnosis is often difficult as the physical signs are confusing. Following an operation for perforation of a viscus the symptoms due to peritoneal irritation continue or subside and the reappear after a number of days as a rule gradually. When an abscess forms before operation as the result of perforation the symptoms usually appear more gradually and may suggest the presence of some other condition.

Usually when the abscess is secondary and frequently when it is primary it is mistaken for a pathological condition above the diaphragm.

As usually described the physical signs found are dullness or flatness diminished breath and voice sounds and vocal fremitus with the presence of rales over the base of the lung. The area of dullness is convex upward and does not change with a change in the patient's position. If gas is present there are three zones of different resonance: normal above below this tympany caused by the gas and below this an area of flatness caused by pus which is continuous with liver dullness on the right side. These are the classical findings but frequently the signs are very confusing. The abscess may be so well walled off that there is little absorption and therefore only a slight increase in the temperature of the leucocyte count.

The diagnosis is best confirmed and the position and size of the accumulation determined by fluoroscopic examination. This examination should be made with the patient upright if possible; if not he should be on the side opposite the lesion. Puncture should be reserved until a careful X-ray study has been made.

If the accumulation is in front it is best approached by a high right rectus incision. Posterior abscess is best approached by resection of the tenth rib in the posterior axillary line under local anaesthesia. The pleura is carefully pushed upward, the costo-phrenic space entered and the diaphragm seen. A large aspirating needle is pushed through the diaphragm, the pus located and a small opening made in the diaphragm and enlarged by stretching with the scissors so that a large rubber drainage tube may be introduced. If the pleura has been accidentally opened it should be closed if it contains no fluid and the wound packed with gauze for from twenty-four to forty-eight hours to allow adhesions to wall off the pleural cavity. If empyema is already present it should be drained by the usual resection of the seventh or eighth rib and the abscess below the diaphragm approached by resection of the tenth rib in a different line or the abscess should be drained through the same incision but opened twenty-four hours or more after the pleura has been drained. It is important to continue the drainage for a sufficient length of time.

Eleven cases are reported. In nine the abscess was on the right side and in two on the left side. Seven of the patients were males. Nine patients recovered and two died. Eight of the abscesses were pre-operative lesions and three were postoperative lesions. Five were probably the result of perforated duodenal ulcer, three of appendicitis, one of actinomycosis, one of echinococcus cyst of the liver and one of a bullet wound of the upper part of the liver. The author was impressed with the frequency of error or delay in the diagnosis due to the belief that the lesion was above the diaphragm. In most of the cases the X-ray showed the elevation of the diaphragm and the presence of gas.

Errors in the diagnosis could occur less often if it were kept in mind that compression caused by fluid below the diaphragm may cause physical signs closely resembling those of a lesion in the chest, if the symptoms of an acute abdominal lesion were properly interpreted and if the X-ray examination were repeated when necessary and made with the patient in the erect position or if this appears unwise in the lateral position.

CLAYTON F. ANDERSON, M.D.

# GYNECOLOGY

## UTERUS

**Dal Collo P G Experimental Decidual Reaction Caused by Intra Uterine Implantation (Rejone decidual sperminated intra uterine doutrina) A h d obst gynec 1924 21 49**

The author reviews the work already done in this field particularly by Loeb and by Retterer and Voronoff. Retterer and Voronoff claim that they can produce histological changes in the uterine mucosa i.e. of the maternal part of the placenta by means of intra uterine implantations of ovary. They do not take into account the work of others who have found that foreign bodies implanted on the uterus bring about a true decidual reaction in the mucous membrane of the organ.

In the experiments here reported Dal Collo compared the action of inert bodies and ovaries introduced into the uterus of the dog. They did not take into consideration the functional state of the implanted ovaries or of the ovaries of the animal undergoing the implantation.

After laparotomy one of the uterine cornua was brought forward and an incision about 1 cm long made in the body of the uterus. A piece of ovary or sambucus maritima tied to a double silk thread was then introduced into the uterine cavity by means of a needle which was brought out of the uterus as far as possible away from the site of the incision. By pulling on one thread the tissue was brought to the site of the needle exit. The thread was then tied to the other one emerging from the incision and the uterus and laparotomy wound were sutured. By implanting the tissue away from the site of the incision confusion on that might arise in the later histological studies from the cicatrization of the incision was avoided. From two to eight weeks after this procedure the uterus was removed for macroscopic and microscopic study.

In these experiments all of the elements of the implanted ovary were always found in a state of regression which varied in degree with the length of time that had elapsed since the operation.

The condition of the uterine mucosa was about the same whether ovary or sambucus was implanted. While at times it presented no particular changes from the normal in the majority of cases it was found remarkably thickened but in different cases different elements of the mucosa predominated in the hypertrophy. In some instances the deepest parts of the mucosa were hypertrophied and presented more numerous and larger glands with lumina eight to ten times the normal containing granular detritus and homogeneous colloidal masses. In these cases the deep part of the mucosa assumed a spongy appearance and sometimes was almost polycystic but

differed from a normal spongiosa in the lumina of the tubules and the irregularity of their distribution.

In other instances the superficial parts of the mucosa predominated in the hyperplasia. Excrescences of these superficial parts were found which were provided with connective tissue stroma and abundant vessels and lined with epithelium. Sometimes the epithelium was unchanged but sometimes it was stratified forming the syncytial masses described by Decio. Occasionally these almost papillomatous formations with or without syncytium like epithelial proliferations coexisted with the glandular proliferations in the deeper parts of the mucosa but more often one phenomenon was present alone.

A more detailed examination of the interglandular and subepithelial connective tissue sometimes disclosed sites of infiltration suggesting an incipient decidual reaction. The infiltrating cells were large and round or polygonal with central round and compact nuclei and with abundant protoplasm which sometimes was granular. These cells were found in large or small groups with little intercellular material and often near small blood vessels.

Not infrequently there were also small groups of vesicular cells with well stained nuclei sometimes eccentric wherein Sudan III staining revealed a wealth of lipoid granules. The significance of these cells is not known.

Dal Collo concludes that the implantation of an ovary or of an inert body can induce in the uterine mucosa a series of changes which are usually associated with pregnancy but that these changes are incomplete and as a rule do not involve all of the mucosa at once. Ovarian substance implanted in the uterine cavity does not produce a true maternal placenta as Retterer and Voronoff assert but merely histological changes suggesting its formation and these are not constant or complete.

S. VATORE DI P. L. M. M. D.

**Hartmann and Bonnet Bladder Disturbances in Cases of Uterine Fibroids on the Basis of 1000 Consecutive Cases of Fibroids (Les troubles de la vessie dans les fibromes utérins) Gynec 1914 9 4**

The occurrence of bladder disturbances in cases of uterine fibroids is mentioned in literature on gynecology and in nearly every instance these disturbances are attributed to fibroids on the anterior surface of the uterus and especially those in or near the cervix. Believing this theory to be only partially correct Hartmann and Bonnet examined the records of 1000 consecutive cases of fibroids they had operated upon. Their conclusions may be summarized as follows:

Pollakiuria is very frequent but in itself is not indicative of the presence of a fibroid. When it is caused by a fibroid it is present only during the day and therefore is not to be confused with that due to cystitis. The immediate cause is a local hyperemia of the trigone demonstrable by the cystoscope. Cystitis may be present at the same time and when there is severe retention may evolve into the membranous or gangrenous form.

In two of the cases studied there was hæmaturia with retention of urine and cystitis. Of greater importance is the hæmaturia occurring during the development of the tumor and in the absence of retention. In the one case of this type which was studied an erroneous diagnosis of myoma of the bladder was made. The tumor which was the size of a marble was located on the anterior surface of the uterus near the cervix and the adjacent bladder mucosa was red and hypertrophied. The authors cite a few similar cases from the literature.

Urinary retention was present in thirty five (35 per cent) of the cases. This incidence is high. In six retention was the only sign produced by the tumor.

The clinical features of retention are varied. The onset may be sudden without preceding symptoms or gradual with all the disturbances associated with chronic incomplete retention. Retention usually appears in the morning and ceases later in the day. Frequently attacks of acute retention occur with the menstrual periods. Incontinence of the passive type was observed by the authors once but there was no case of simple incontinence in their series.

The most common location of a tumor causing retention was the posterior surface of the cervix. The growth was incarcerated in the hollow of the sacrum and forced the cervix upward and forward. The conditions were approximated by those produced by an incarcerated retroverted pregnant uterus. Tumors of the anterior wall of the uterus drawing up the bladder and obliterating the vesico uterine cul de sac seldom cause trouble.

In twenty-one of the author's thirty-one cases with retention the tumor was found in the posterior uterine wall.

The pathogenesis is not a paralysis of the nerves of the bladder or a flattening of the bladder. An unusual hyperemia may be a factor.

In a few instances a fibroid of the anterior wall of the uterus will exert direct pressure on the urethra.

The mechanism is probably the same as that of an incarcerated retroverted pregnant uterus. A fibroid of the body of a retroverted uterus or of the posterior wall of the cervix produces a similar condition a longitudinal stretching of the urethra.

ALBERT F. DeGROOT, M.D.

Gullifoud Myomectomy Followed by Cesarean Section (Opération césarienne) d'une femme grosse p. le myome utérin) B. S. d. b. t. d. g. y. e. d. P. 95 x 40

A woman 27 years old who had been married four months was seized on March 5 1920 with ab-

dominal pain and metrorrhagia. On examination she was found to be in the second month of pregnancy but as the uterus was above the umbilicus the presence of a complicating fibromyoma or hydatiform mole was suspected.

On April 1 the pregnancy was interrupted with a catheter and a diagnosis of voluminous fibroma of the left side of the uterus was made. On April 2 the patient aborted. The abortion was followed by a severe hemorrhage. Further examination revealed a fibroma which extended to the umbilicus. In November when she again became pregnant the bleeding recurred. On April 11 1921 in her fourth month of pregnancy a voluminous cystic fibroid was removed by myomectomy and the left adnexa were resected. On histological examination a diagnosis of malignant fibroma was made. Convalescence was complicated by phlebitis which first affected the right leg and then the left.

On October 17 1921 the patient's condition was good and menstruation recurred. On June 16 1922 she came to the hospital again and was found three months pregnant. On July 27 the uterus was larger than it should have been and on account of the diagnosis of malignancy which had been made previously a recurrence was suspected. On December 8 1922 a diagnosis of placenta prævia was made. To the left of the cervix was a fixed mass which caused deviation of the cervix to the right.

On December 8 1922 a caesarean section was performed and as new fibromata were found on the left side of the cervix and in the broad ligament a total hysterectomy was done. Histological examination of the growths revealed that they were either sarcomata or malignant myomata.

During the convalescence the patient developed a mass in the left femur which proved to be an inflammatory abscess due to severance of a ureter. On account of this condition a left nephrectomy was performed on January 13 1923. Another operation was done on January 29 to drain the pelvic abscess. The patient was discharged as cured March 7 1923. On November 9 1923 both mother and child were in good condition. SALVATORE DI PALMA, M.D.

Douay E. Radium and Cancer of the Cervix. Results in Cases Treated in 1919 1920 and 1921 (Radium et cancer de l'ovaire et des ligaments des ovaires) Pa. 1924 x 8

The author irradiated fifty cases of cervical cancer with radium in the period from 1919 to 1921. Six (12 per cent) were clinically cured after three years. Of the twenty six patients whose condition was inoperable twenty four died of recurrences but two (7.6 per cent) are now in good health. Of twenty four operable cases twenty two could be traced four (15.4 per cent) remained clinically cured. Of the twenty two operable cases traced ten were cases in which the uterus was not fixed and the cancer was limited. Three (30 per cent) of these patients are in good health. Of twelve patients whose condition was

advanced but still operable only one (8.3 per cent) is in good health. Of the patients with recurrences involving the glands two were treated with radium after laparotomy and have remained cured for three and one half years.

Douay concludes that unless radium gives results a great deal better than those so far obtained by surgery the treatment of choice for cancer of the uterus is radical operation.

The article contains a brief résumé of fifteen cases which testify that laparotomy need not be a

Tuberculosis is not often seen. The peritoneal reaction appears extremely early about three hours after the rupture.

Rupture is marked by very sudden severe abdominal pain. Perforation is preceded by the symptoms of an acute infection. Often there is a considerable degree of shock. Subsequently the symptoms and physical findings of acute generalized peritonitis develop.

The treatment is operation performed as early as possible. The best results have been obtained by removal of the tube with drainage of the cul de sac of Douglas through the abdominal wall. Lavage of the abdominal cavity has been abandoned.

ALBERT F. DECHERT, MD

Schwarz O H and Crossen R. Endometrial Tissue in the Ovary. *Am J Obst Gynecy* c 1924 11 505

This article is based on the examination of 420 ovaries. For 236 specimens no gross specimen was available and in many of these cases only one section could be studied. In the remaining 164 cases however numerous blocks were taken from one or both ovaries.

In the group of 164 cases there were eleven with endometrial tissue and seven with hematoma of the endometrial type while in the group of 236 cases there were five with true endometrial tissue and four with hematoma. Therefore the incidence of these types was very much higher in the series in which the gross specimens were studied.

The authors believe that they have been able to study a sufficient number of cases of endometrial tissue in the ovary to observe the lesions in most of its phases. The frequency with which they encountered it leads them to conclude that it is fairly common.

In the stage which represents a hematoma surrounded by a wall containing old blood connective tissue cells and large mononuclear degenerating cells without any epithelium the lesion can be easily overlooked. Sampson's picture describing this late stage is very characteristic. The authors failed to observe this lesion in connection with the definite but infrequent follicular hematomata in various stages although the latter conditions were present in a considerable number of the cases. Occasionally there was a somewhat similar but small stromal hemorrhage but this occurred rather irregularly and never in the same characteristic manner in which it was constantly observed in connection with the hematoma type of endometrial origin. In the presence of adhesions associated with hemorrhage the germinal epithelium of the ovary may simulate tube or uterine epithelium. The authors have noted this frequently but have not observed the formation of gland tubules beneath such an area or any characteristic stroma beneath the germinal epithelium.

Schwarz and Crossen believe that in the production of the lesions of diffuse adenomyoma of the uterus in the case of chronic subinvolution of the

## ADNEXAL AND PERIUTERINE CONDITIONS

Huet I A. Rupture and Perforation of Pyosalpinx Into the General Peritoneal Cavity (Rupture et perforation du pyélique péritonéal). *J Gynecol* 1924 11 123

The observation within a short period of time of two cases of rupture of a pyosalpinx into the general abdominal cavity led the author to review the literature on the subject.

The first case was reported by Tait in 1868 (1873 and 1883). In 1912 Strickner collected ninety-one cases and since then several isolated reports have appeared.

With regard to the frequency of this accident there is considerable difference of opinion. It is certainly rather uncommon but doubtless in many cases the origin of the diffuse peritonitis remains undetermined. It usually occurs in the third decade of life.

When the rupture is produced by trauma the resulting symptoms appear at once. The use of the term rupture is not warranted when the effects of an injury do not become apparent until after two or more days. Trauma or over energetic treatment in the case aggravates a pre-existing infection. This is indicated by the temperature changes and other symptoms in the interval following the injury. Often an increase in the size of the collection of pus will be noted sometime instead of a clearing up. In all infection a new one may be superimposed on an old one such for example as postabortive infection or a salpingitis that has become quiescent. Rarely does a recent case of salpingitis evolve as far as perforation.

The cases may be divided into two classes: cases of rupture and cases of perforation. When an old pyosalpinx breaks into the peritoneal cavity following a direct injury the term rupture is correctly applied. When bursting of the tube results from an increase in the pressure of an old infection the occurrence should be called perforation. Because of the difference in character of the contents of the tube under these circumstances perforation is the more serious.

The pathological condition found is a pyosalpinx. Usually it is bilateral. The opening in the tube may be a linear tear or a large gap in an area of necrosis. The pus may appear to be sterile or may contain gonococci, streptococci or colon bacilli.

uterus with no other lesion in the uterine wall the glands invade the wall primarily and the hyperplasia of the myometrium develops subsequently. That such hyperplasia could occur from glands invading the peritoneal surface is well illustrated by Seelig's case in which the lesion was in the appendix. Accordingly it seems probable that the muscle tissue so well developed in the late stages of adenomyoma of the rectovaginal septum may originate in this manner.

EDWARD L. CORWELL, M.D.

#### EXTERNAL GENITALIA

Schroeder R. Vaginal Discharge (U. b. d. n. 1720 a. n. b.) At. B. k. s. k. 193. 291

The cervical canal may become the source of increased mucous secretion as the result of a mechanical injury, bacterial disease (chronic cervicitis), vaginitis, gonorrhea and postgonorrheal irritation, polyps of the cervical mucosa, submucous myomata projecting into the vagina and carcinoma of the cervix. The condition most commonly associated

with cervical hypersecretion is erosion of the portio vaginalis.

In the vagina through the activity of the vaginal bacilli an acid reaction is produced. Neutralization or alkalinization of the vaginal secretion by excess alkaline mucus from the cervix favors the invasion and overgrowth of foreign organisms which may cause severe damage to the walls of the vagina. Often in such cases the trichomonas vaginalis is found but the author does not agree with Hoehne that this organism is the cause of the condition. While the normal vagina is very resistant to invading organisms such factors as infantilism, ovarian weakness and general diseases lower its resistance.

The vulva also may be the source of a discharge.

A thorough general and gynecological examination should be made and particular attention paid to the microscopic and cultural findings. In cases of catarrh of the cervix treatment for gonorrhea, plastic removal of scar tissue or treatment for vaginitis should be given depending upon the cause of the condition.

STRAKOSCH (G)

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Da l J F Kellogg B A and Arnold A L  
Anatomical and Clinical Studies upon 875  
Placentae in J Obst Gyn 1941 43

Simple washing of the venous and arterial blood  
circuits of placenta with water at hydrant pressure  
with the aid of gentle hand massage will pre-  
pare the tissue for a satisfactory gross examination  
and will aid in the selection of sections for micro-  
scopic study

The note that have been washed free from blood  
injected with a simple opaque material such as  
barium sulfate and then photographed from X-ray  
negatives provide very satisfactory preparations for  
the detection of obstructive areas in the blood cir-  
cuit and atrophic changes in the parenchyma

The injection of the cleared blood circuits of the  
placenta with a 10 per cent gelatin preparation and cor-  
rosion of the tissue outside of the circuit prepares  
excellent specimens for anatomical study of the  
canalization architecture

When the cord is centrally inserted each artery  
supplies approximately half of the placenta. In  
placenta with a centrally inserted cord one artery  
usually supplies two thirds to the three fourths  
while the other artery supplies the remainder. In  
placenta with marginal insertion and those with  
velamentous insertion the distribution may be  
approximately equal or one artery may supply only  
a small area. In the placenta of an oblique type  
there is a direct anastomosis on the fetal surface be-  
tween the arteries of both cords but no direct  
anastomosis between the fetal surface of the  
placenta of the bilateral type there is no anastomosis  
between the vessels on the fetal surface nor between  
adjacent cotyledons along the line of the placental  
union

Necrotic areas may be interpreted as the result of  
infarction infection or the changes of age. In-  
farction changes the most common of all lesions in  
the placenta are to be regarded as both physiologic  
and pathological. Their size age position and  
duration are of importance. When they are situated  
centrally and disturb a large area of blood supply the  
result is disastrous to the fetus. Cysts are not of  
much importance unless they are fairly large. They  
usually form in the areas of infarction or hemor-  
rhage. Cystic degeneration of the chorionic villi dis-  
tributed uniformly over the branches of the chorionic  
stems is to be recognized as a chorionomatous tumor  
mass (chorio epithelioma benignum)

Of 500 consecutive patients examined 19.60 per  
cent gave no evidence of general pathology while  
they were in the hospital for confinement and had  
no record of abortions miscarriages at births

neonatal deaths or previous puerperal pathology.  
Judged by rigid microscopic standards 33.0 per cent  
of the group gave evidence of reaction to infection  
in the placenta amnion or umbilical cord. Only 1.2  
per cent of these gave histologic or serologic evidence of  
syphilitic infection

The gross appearance of the cord and placenta  
indicated that normal cases 17.0 per cent of the  
500 specimens. While infarction was observed in  
2.4 per cent but when the cases were checked  
with microscopic and laboratory criteria for normality  
it was found that only 2.2 per cent showed no  
condition to an excessive degree

Albuminuria was observed in 28.25 per cent and  
hypertension in 36.55 per cent of the cases. The  
mothers who had had previous abortions and pre-  
vious premature labors constituted 17.60 per cent.  
The combined infant mortality and mortality was  
39.61 per cent. The mortality during the per-  
ipartum was 4.4 per cent. The incidence of infection  
was 33.6 per cent. This percentage is high but corre-  
sponds very closely with the clinical data and data  
of pathology

Edward L. Cosmides, M.D.

Crosse A and Pasquereau A. Bilateral Pyelo-  
nephritis and Cholecystitis During Pregnancy  
Treatment with Autogenous Vaccine Delivery  
of a Living Child at Term Recovery (Pyelo-  
nephritis and cholecystitis tend to be fatal in  
autochthonous cases) ou h me t à term relati-  
t guérison de la mère. Rev f de gyn  
et obs 94 x 25

A young primigravida with a negative history  
was seized with severe pain typical of biliary colic  
and associated with vomiting chills and fever. On  
the following day lumbar pain on the right side  
and radiation into the abdomen tenderness in the  
right costovertebral angle and pyuria suggested  
pyelonephritis of the right kidney. The urine gave  
a pure culture of *Freidlander's bacillus*

The treatment consisted in the use of an auto-  
genous vaccine each cubic centimeter of which con-  
tained one million organisms. A week later the  
symptoms were more severe and the vaccine was  
therefore administered erythrotherday. The amount  
used was at first 0.5 ccm and was gradually in-  
creased

For three weeks there was improvement but at  
the end of that time the left kidney became involved  
the general symptoms were aggravated and violent  
renal colic was caused by the passage of firm muco-  
pusulent masses. This attack was followed by an  
other three weeks of gradual improvement. A  
healthy infant was then delivered at term and the  
mother made an uneventful recovery

Allen F DeGouy, M.D.

Fink A. Ocular Disturbances During Gestation  
(Augenstörungen im Gestationsprozess) *Dtsche  
med Wchnschr* 1923 xlix 1455 499

The relationships between the processes of gestation and pathology of the visual organs are numerous. In this article the author deals only with the visual disturbances and changes in the eye grounds which are associated with hydrops gravidarum and the various forms of typical nephritis in pregnant women.

All disturbances of vision during pregnancy unquestionably demand an examination with the ophthalmoscope. It is generally believed that the acute disturbances of vision or blindness in pregnant women with the signs of nephropathy or with a threatened or an already present eclampsia are relatively unimportant and do not indicate interruption of the pregnancy in cases of acute blindness or severe amblyopia with normal eye grounds. Removal of the products of gestation becomes necessary only when uræmia is present. On the other hand, visual disturbances of gradual onset may have an extremely serious pathological basis. The cause may be a chronic nephritis, but this is true in only the occasional case.

When detachment of the retina is found it is necessary to determine first whether the cause is a simple nephropathy or a severe chronic nephritis. In cases of simple nephropathy an attempt should be made to obtain re-attachment of the retina by rest in bed and dietary measures. In severe chronic nephritis the uterus should be emptied at once.

The theory that retinitis gravidarum occurs only with chronic nephritis is incorrect. This condition is often among those associated with hydrops gravidarum, namely the kidney of pregnancy, nephropathy and eclampsia. It is only in the exceptional case that retinitis gravidarum is an indication for the interruption of pregnancy. The prognosis as to life and to vision is favorable. Three of the author's cases proved incorrect Adams's theory that the prognosis is poor in the cases of pregnant women with a chronic nephritis who develop retinitis. However, when the retinitis is due to nephritis the uterus should be emptied as in such cases the prognosis as to life and vision is very poor. Schloetz believes that the patient with chronic nephritis and associated changes in the eye grounds should be subjected to sterilization, but in the author's opinion this is warranted only in the most severe cases.

VON LITTEK ~ (6)

Bunzel E. E. A Statistical Review of the Toxæmia of Pregnancy. *Am J Obst & Gy* 1914 1: 686

In a series of 465 cases of gestation toxæmia the pregnancy was terminated or labor was induced in 100 (23 per cent). This was done by dilatation and curettage in four cases, hysterotomy and sterilization in three, hypodermic injections of pituitrin in three, artificial rupture of the membranes in six, the introduction of a bougie in twelve, the introduction of a

Voorhees bag in fifty-one, vaginal hysterotomy in three and abdominal caesarean section in eighteen.

Of the eighteen abdominal caesarean sections fifteen were performed for indications other than the toxæmia. Operative induction after the fifth month of pregnancy was done because of toxæmia in only sixty-nine cases (14.8 per cent). Fifty-four patients (11.6 per cent) had convulsions. Two had been toxic in previous pregnancies and two had had toxæmia with convulsions. The onset of convulsions occurred in the fifth month of pregnancy in two cases, in the sixth month in four cases, in the seventh month in twelve cases, in the eighth month in seventeen cases, and in the ninth month in nine cases.

Of the fifty-four women with convulsions, ten (18 per cent) were private patients, most of whom were first seen after the onset of the toxæmia, fifteen (28 per cent) were clinic patients, and twenty-nine (54 per cent) were emergency cases.

The convulsions developed before labor in thirty-one cases (57 per cent), during labor in eleven cases (13 per cent), and after labor in sixteen cases (30 per cent).

Labor was induced or hastened in eighteen cases (33.3 per cent). The method used was vaginal hysterotomy in two cases, abdominal caesarean section in two cases (both with a deformed pelvis), the introduction of a bougie in one case, and the introduction of a bag in thirteen cases.

In the fifty-four cases of convulsions there were six maternal deaths (11.1 per cent). Labor was induced by bags in four of these cases. In one delivery was accomplished by version and breech extraction because of a prolapsed cord. The baby was saved but the mother died of shock. In another that of a woman who had sixteen convulsions before and during labor, a dead baby was delivered with difficulty by means of instruments. In two cases in which bags were employed the convulsions continued postpartum and the mother died of an overwhelming toxæmia. In one of the latter cases the liver was four times the normal size and contained many hemorrhages. Of the two maternal deaths occurring in cases in which bags were not employed, one occurred before delivery following the signs of a cerebral hemorrhage and the other followed a hurried difficult forceps delivery done because of convulsions which began in the second stage; the convulsions continued in the postpartum period.

The onset of the convulsions occurred before delivery in four cases and during delivery in two cases. There were no deaths in the group of sixteen cases in which the convulsions began after delivery. Five of the patients with convulsions who died were in the eighth month of pregnancy and only one was at term.

Of the babies in the fifty-four cases of convulsions, twenty-six (49 per cent) left the hospital alive and well and six (11 per cent) died after birth. Four of the latter were premature and in one hemorrhages were found in the viscera at autopsy. In one case ro



definite cause of death as found. Twenty-one (40 per cent) were stillborn. Of these eight were macerated, one showed osteogenesis imperfecta, two were injured at the time of delivery and in four visceral hemorrhages were found at autopsy. In six no definite cause of death could be discovered.

In the entire series of 463 cases there were twenty-five pairs of twins and one set of triplets. Three hundred and eighty-two babies (8 per cent) were born alive and 111 (22 per cent) were stillborn.

In the 111 cases of stillbirth, pregnancy was interrupted by dilatation and curettage in three and by hysterotomy in four. There were forty-five cases of macerated fetuses, thirty premature births, fourteen deaths due to injury at the time of delivery, one case in which the mother had meningitis, one case in which the mother had aortic aneurysm, one case of pneumonia, ten cases in which no cause of death could be found, and three cases of congenital anomaly (hydrocephalus, general anasarca, and osteogenesis imperfecta).

Of the 182 babies born alive, twenty-nine (16 per cent) died subsequently in the hospital from the following causes: a congenital heart condition, one; congenital syphilis, one; congenital clubfoot of the abdominal wall, one; visceral hemorrhages, three; pneumonia, three; and premature birth, eleven. In eight cases no demonstrable cause of death could be found. Three hundred and fifty-three babies (72 per cent of all those born of toxemic mothers) left the hospital alive and well.

The maternal deaths in the entire series of 463 cases numbered fourteen, a gross maternal mortality of 3 per cent. In four of these fourteen fatal cases, none of which were emergency admission, death was due to other complicating conditions. In one case that of a woman who had been delivered of triplet, autopsy showed myocarditis, bronchopneumonia, and chronic nephritis. In one case of placenta previa, the child was delivered by version and breech, the placenta was extracted manually, and the uterus packed. One woman died before delivery of cardiac insufficiency, and one died with symptoms of meningitis. Therefore, the corrected maternal mortality of pregnancy with toxemia was 2 per cent.

The article is summarized as follows:

The incidence of pregnancy with toxemia is 6.3 per cent, and convulsions occur in 0.5 per cent of all pregnancies.

Careful prenatal care with hospitalization of patients showing signs or symptoms of a complicating toxemia is essential. During the prenatal period, foci of infection, especially in the mouth, should be cleared up. The patient's home conditions should be investigated and corrected in order to eliminate any source of worry.

Many cases go into spontaneous labor. Even when convulsions have developed, induction is contraindicated until medical treatment has been given a fair trial.

A Toxemia Follow Up Clinic is of great importance for here the patients may be observed and treated while they are in the non-pregnant state. In

such a clinic a pre-pregnancy course of treatment might be given which would lead to improvement in prenatal care.

EDWARD L. CORNELL, M.D.

Magner, W. Th. Pathology of Stillbirth and Neonatal Death. *J. Clin. Med.* 924: 11-440.

The author defines stillbirth and neonatal death. The term neonatal death he applies to the deaths of infants occurring after birth from some cause arising within the uterus or during delivery.

The article is based upon a study of thirty-nine cases in which autopsy was performed. Of these, twenty-two were cases of stillbirth and seventeen were cases of neonatal death.

Of the stillbirths, 45.4 per cent were attributed to asphyxia or interference with oxygenation of the fetal blood.

The author's conclusions with regard to asphyxia neonatorum are as follows:

1. In the presence of general lividity and multiple subpleural and subpericardial hemorrhages in conjunction with fluidity of the blood and congestion of the meninges and viscera, it is justifiable to conclude that the infant died from asphyxia.

2. When with the findings mentioned there is a maternal placental or cord condition sufficient to account for a reduction in the circulation through the placenta or deficient oxidation of the infant's blood, a diagnosis of primary asphyxia is unsatisfactory.

3. It is not justifiable to attribute death to asphyxia on the basis of petechial hemorrhages alone as the latter may be due to a minor degree of asphyxia associated with birth or possibly to degenerative changes in the capillaries associated with a toxic process.

4. The weight of evidence regarding the occurrence of respiratory movements in association with intra-uterine asphyxia.

5. Asphyxia is the most common cause of stillbirth.

Maternal toxemia may and usually does cause the death of the infant as a result of secondary changes in the placenta. The so-called albuminuric placenta usually shows very numerous pale bloodless areas on its uterine surface and extending for variable distance into the substance of the organ. Hemorrhages are also very common.

The lesions described are to be regarded as pathological more because of the extent than because of their presence.

While death was attributed directly to maternal toxemia in only 14.2 per cent of the cases reported, it is very probable that in the last analysis this condition would be found responsible for a large number and perhaps for the majority of stillbirths and early postnatal deaths.

The only conclusive evidence of fetal syphilis is the demonstration of the treponema pallidum in the tissues.

With regard to the placenta, the author states that if the syphilitic fetus survives the period of intra-

uterine decolpment and is born alive the placenta will usually be found normal but the placenta of the syphilitic macerated fetus practically always shows definite pathological changes. Maceration is not indicative of syphilis.

One of the intrapartum deaths was attributed to status lymphaticus.

There were two cases of microcephaly with no macroscopic trace of the adrenals.

In eight of the seventeen cases of neonatal death there were hemorrhages within the cranium in three they were intraventricular and in five meningeal. Of the meningeal hemorrhages all except one were associated with tearing of the tentorium cerebelli. The survival of the infants ranged from one hour to seven days. Trauma is an important factor but in certain cases of hemorrhage the bleeding is due to a hemorrhagic diathesis.

A number of neonatal deaths are due directly to deficient expansion of the lungs, atelectasis. In three cases the death of the infant was the result of bronchopneumonia and in at least one of these the infection was contracted before birth. Other infections also may cause death. In one case it appeared that death was due to a large hemorrhage into the medulla and inner layers of the cortex of the left adrenal. In another case the cause of the infant's death was not determined. The only abnormality found was a considerable amount of slightly blood stained fluid in the peritoneal cavity. This was present in thirteen of the cases reviewed.

ROLAND S. CRYMID

Moulnguét Dole is P. O. in pregnancy (Cont but not a letud of la gr. ce. ne n.)  
G. 18 94 1 5

This article is based on seventy-seven case reports which are summarized briefly and upon one case seen by the author.

The author's patient a woman 9 years old entered the hospital because of continuous menorrhagia with pain. Four days before the onset of these symptoms in menstruation occurred at the normal time but was less profuse than usual. In the absence of signs other than rigidity in the right lower quadrant a diagnosis of appendicitis was made.

At operation the right tube and the appendix were found normal but the right ovary was greatly enlarged and contained ecchymoses and a mass having the appearance of a large corpus hemorrhagicum from which a small amount of bleeding had occurred into the peritoneal cavity. There were no adhesions. The right duct was removed.

After having the ovary opened and examined microscopically. In a blood clot within the large mass an embryo was found in an intact amniotic sac. Evidently the ovum had been largely separated from contact with the ovarian tissue by a hemorrhage around it. Externally the capsule of the ovum was continuous with the cortex of the ovary. Internally in the absence of encapsulation the chorionic villi were in direct contact with and ad-

herent corpus luteum. The blood vessels of this region were markedly dilated because of the presence of the trophoblast.

Examination of the embryo revealed such marked abnormalities that its age could not be determined.

The etiology of ovarian pregnancy is obscure. Evidently fecundation occurs at the time of ovulation or just preceding it but the exact point of implantation cannot be determined because of the rapidity of the changes induced by the trophoblastic ectopic pregnancy favored by inflammation.

The pathological anatomy varies greatly with the stage of development of the ovum. An early ovarian pregnancy appears as a hematoma and its nature can be determined only with the microscope. Advanced development of the ovum so distorts the anatomy that its origin within the ovary is very difficult to demonstrate.

The vascular changes at the point of implantation are similar to those taking place in a normal pregnancy but because of the paucity of blood vessels in the ovary the resulting vascularization is more fragile and early hemorrhage and destruction of the ovum usually result.

Frequently the embryo is abnormal as in ectopic development elsewhere.

In a very few hours after the death of a small embryo it disappears by autolysis but the chorionic villi persist for a long time. The chorionic villi have been observed after five months in perfect condition. This finding offers the only means of distinguishing a hemato-peritoneum due to pregnancy from that due to rupture of a graafian follicle, corpus luteum or luteum cyst.

The histology of ovarian pregnancy proves conclusively that the implantation is an active process on the part of the ovum and that the decidua is of maternal origin and not essential to the implantation of the ovum. It is probable that the tissue described in certain case reports as decidua tissue was a portion of greatly altered corpus luteum.

Contrary to general opinion the point of implantation is seldom within a follicle.

In ovarian pregnancy rupture is apt to occur very early and the hemorrhage is seldom severe.

Occasionally hemorrhage about the ovum arrests the growth but fails to rupture to the surface of the ovary and passes unrecognized. In cases of persistent pain operation may reveal a large ovary containing an organized blood clot.

Advanced ovarian pregnancies are difficult to identify. While the removal of a viable fetus at term has been reported death with maceration of the formation of a lithopedion is the usual history.

ALBERT F. DEGROOT, M.D.

#### LABOR AND ITS COMPLICATIONS

Hodgkins E. M. The First Transperitoneal Cesarean Section. B. I. M. & S. J. 924, 1909.

In the author's opinion we should consider all of the newer cesarean sections as cervical operations.

and then divide them into extraperitoneal intra peritoneal and transperitoneal procedures. The extraperitoneal operation has been given up as impractical. The intraperitoneal method should be discarded also as it does not protect against spill or infected lochia. In the transperitoneal method the peritoneal cavity is protected. The author describes the technique of the first operation in detail.

In all cases in which a cervical operation is performed some labor is necessary in order that the lower uterine segment may be thinned out and widened and the tissues rendered looser for separation. Dilatation of the cervix is imperative on account of the location of the incision and drainage. The advantages of this operation are illustrated by the report of four cases which were frankly infected. Rupture of the uterus in subsequent pregnancies is not to be feared because of the excellent healing and location of the scar.

The author has operated upon forty three cases. In all except one case there was sufficient labor to dilate the cervix partially. Many of the women were advanced in labor when they were first seen. A large number had been examined vaginally at least once. Instruments were applied in one case only. This case did not become septic as might be expected. There were no maternal deaths. Two of the babies were born dead and one died of atelectasis. The mothers were entirely free from peritoneal reaction indicating peritonitis.

In the first transperitoneal caesarean section the peritoneal cavity is protected from spill and there is no handling of the bowel therefore shock and post operative intestinal complications are minimal. The layers are rapidly sealed and in cases of puerperal sepsis the drainage is extraperitoneal. There can be few intraperitoneal abscesses. Transperitoneal cervical caesarean section can be repeated and is applicable to both clean and infected cases.

K. L. N. C. Cr. M.D.

### PUERPERIUM AND ITS COMPLICATIONS

Rundlett D. L. Some Remarks on the Etiology and Treatment of Puerperal Eclampsia by the Tweedy Method. *J. Low Med. Soc.* 1924.

59

The author states that puerperal eclampsia is due to inability of the mother to assimilate foreign proteins. The treatment consists in elimination during the pre eclamptic stage, the administration of morphine and atropine and the use of measures to promote elimination during the eclamptic stage and delivery by the vaginal route when the cervix is fully dilated and the presenting part is well down in the pelvis.

Rundlett advises against accouchement forcé but if the patient is dying he performs a vaginal caesarean section. He does not recommend vapor baths, chloroform or bleeding. He employs eritrum viride to reduce the blood pressure.

ROLA D. S. CROV. M.D.

Whitehouse B. Puerperal Sepsis Its Prevention and Treatment. *Lancet* 1924. c. 1. 697.

The author discusses puerperal sepsis from almost every standpoint. He draws attention to the very high death rate from the condition in England as compared with Scotland and Ireland. The highest birth rate the greater the maternal death rate. In England as in all other countries the death rate was highest in 1920. Puerperal sepsis is much more common in the urban than in the rural districts. The factors responsible are the squalor and dirt of the slums, the bustle and rush of the town practitioner, the midwife and some of the maternity homes.

In discussing the shortcomings of the midwife Whitehouse suggests that all maternity homes be registered and periodically inspected. Puerperal sepsis may be prevented in the homes of the very poor by proper personnel and care. Better antenatal care and more specialization are necessary.

All streptococci in the genital tract of the parturient woman should be considered as potential sources of infection. Infection by the blood stream is possible. Careful and thorough treatment should be given any septic focus present during pregnancy.

The treatment of puerperal sepsis must be begun early. The local treatment should consist in preparing the patient by shaving the genitals, cleansing the perineum, vagina and uterine cavity with sodium hypochlorite, light curettage and establishing drainage by means of two rubber tubes carried to the top of the fundus. Irrigation should then be done every two or three hours. In the constant presence of a powerful antiseptic curettage has never proved harmful in the author's cases and in several it has undoubtedly caused improvement by removing retained decomposing portions of placenta or membrane.

To date the author has had sixty two cases of severe puerperal sepsis with only five deaths.

As general treatment he recommends: (1) sum therapy, (2) the use of autogenous vaccines, (3) intravenous injections of acriflavine in a 2.50 saline solution, (4) a concentrated and nutritious diet and (5) a liberal allowance of alcohol.

ROLA D. S. CROV. M.D.

Elch I. O. R. A Preliminary Report of a Statistical Study of Puerperal Sepsis. *Am. J. Obst. & Gyn.* 1924. 667.

This article discusses the mortality of puerperal sepsis in New York City and New York State. The geographical distribution of the cases, their occurrence in the practice of physician and midwives, the seasonal variation in the condition, its occurrence with relation to the age and marital status of the mother and the associated causes of death.

During the five years from 1918 to 1922 inclusive there were 7,000 deaths from all puerperal causes in the state of New York. Of these 3,461 were reported from New York City and 3,539 from the rest

of the state. Puerperal sepsis was given as the cause in 1,910 (37 per cent) of those occurring in the entire state, in 852 (24.6 per cent) of those occurring in New York City, and in 1,038 (30 per cent) of those occurring in the rest of the state.

For six years following 1910 the trend of the death rate from all puerperal causes (this being a rate based on five births and stillbirths combined) was definitely downward. The New York City rate dropped from 56 per cent in 1910 to 44 per cent in 1917 and that for the rest of the state from 9 per cent in 1910 to 53 per cent in 1916. In 1918 the influenza epidemic caused the rate to rise to 60 per cent in New York City and to 83 per cent in the rest of the state. After 1918 it dropped sharply.

The sepsis rate declined in New York City from 19 per 10,000 live births and stillbirths combined in 1910 to 12 in 1922 and in the rest of the state from 23 in 1910 to 21 in 1922. The speed of the decline was slightly greater in New York City and about ten points lower throughout. In no year was the rate for the rest of the state as low.

In New York State the mortality from all puerperal causes from septicæmia alone and from puerperal causes exclusive of septicæmia shows a very definite and regular seasonal variation. The septicæmia peak occurs in March and that due to puerperal causes in February.

In general the lowest mortality from both septicæmia and other puerperal causes is found in the large cities which have the largest proportion of non-resident patients. This is probably due to the fact that the non-resident mother is usually confined in an institution where there are better facilities for proper care than in a private home.

During the five year period studied the number of deaths from puerperal septicæmia was 14 per 10,000 live births and stillbirths in New York City and 23 in all upstate cities combined. In upstate villages of over 500 population and 16 in the rural areas of the state. Thirty-four upstate cities had rates ranging from 20 to 64.

Deaths due to sepsis were not limited significantly to any one or even several physicians in any city, but on the contrary were freely distributed in the practice of many physicians. These men included the majority of physicians who attended obstetrical patients and therefore were exclusive of specialists and aged or retired practitioners.

While it is generally believed by members of the medical profession that the midwife is largely responsible for the high mortality from puerperal causes the facts in New York State are entirely to the contrary.

Of the 1,096 deaths from all puerperal causes in 311,872 confinements during the years 1919 to 1921 650 (32.6 per cent) were due to septicæmia. Reducing these to a ratio per 10,000 confinements at each successive age from 15 to 50 years the following distribution is obtained: from 15 to 19 years of age 20.0 per 10,000 from 20 to 24 years 18.4 from 25 to 30 years 18.8 from 30 to 35 years 2.8 from 35

to 40 years 2.1 from 40 to 45 years 28.5 and from 45 to 50 years 32.0. Therefore the danger of death from septicæmia increases steadily after the twentieth year.

There were 603 deaths from septicæmia among married mothers in 308,176 confinements; the mortality being therefore 19.6 deaths per 10,000 as compared with a rate of 120.3 among unmarried mothers with 3,481 confinements and forty-five deaths from septicæmia. In the cases of married women the incidence of stillbirth was 3.3 per cent while in those of unmarried women it was 6 per cent.

EDWARD J. CORNELL, M.D.

#### Bailey H. The Serum Treatment of Puerperal Sepsis. *Am J Obst & Gyn* 1924, 1, 638

The serum used in the cases reported was prepared by Hinton. Horses were repeatedly injected with a mixture of strains selected to cover the majority of hemolytic streptococci represented in the serological classification and in disease sources.

In most instances 100 c cm were given but in one or two cases only 50 c cm were administered. Before injection the patient was tested for hypersensitivity. An erythema less than 2 cm in extent was considered the limit for a negative test. In one case desensitization was necessary. This was done by administering small doses beginning with a drop and gradually increasing the amount to 1 c cm in the course of about an hour.

A number of the patients developed serum sickness. As a rule this was first evidenced after forty-eight hours. Large urticarial wheals appeared but while the itching was always intense it was temporary, relieved by small doses of adrenalin. The author has ceased to fear serious effects from the administration of the serum per se.

In the presence of a fever continuing through a second twenty-four hours 100 c cm of serum should be administered after proper desensitization tests and at the time that the blood and uterine cultures are taken.

The patients with infection were kept out on a balcony between two wards and in both winter and spring were exposed to the outdoor temperature. Most of the beds were protected from direct drafts by window screens in arches of the balcony. No local treatment was given. The number of examinations by vagina or rectum were limited. Following the injection of the serum and the decrease in the temperature there was usually a focal exudate. It seemed to Bailey that the serum had a definite tendency toward localizing the disease by the production of a parametritis.

EDWARD J. CORNELL, M.D.

#### NEWBORN

##### Capon N. B. Hemorrhagic Disease of the Newborn With Report of Six Cases. *Lancet* 1924, 1, 3

In hemorrhagic disease of the newborn the hemorrhage usually begins between the second and

fifth days after birth and rarely lasts more than five days. It may be external or internal. External bleeding may occur from the nose, mouth, vagina, urethra, bowel or umbilicus. Melena with or without hæmatemesis is the most frequent form. The blood is usually fluid, but occasionally contains clots. Icterus is frequently noted.

Before the introduction of treatment by blood injection the mortality ranged from 50 to 60 per cent. Today it is from 10 to 20 per cent.

Ulceration of the gastrointestinal canal occurs in less than 50 per cent of the cases; the majority show only hyperæmia, congestion and punctiform hæmorrhages of the gastrointestinal mucous membrane. Occasionally small superficial erosions are seen. It is said that round cell proliferation occurs in the submucosa.

It is now generally believed that the fundamental cause of hæmorrhagic disease of the newborn is a fault in the blood chemistry.

The best treatment is the administration of whole blood. Whether the disease is due to a deficiency of prothrombin, of platelets, of fibrinogen, or of thrombokinase, whole blood will supply the deficiency. Whole blood probably stimulates the neonatal tissues to produce the substance which was previously deficient or absent and compensates for the loss of fluid due to the hæmorrhage.

Unless the bleeding is very severe at its onset, the whole blood may be given at first by the subcutaneous or the intramuscular route. The dose to be administered will depend upon the findings made at the clinical examination. In a case of average severity it is probably best to begin by injecting 20 c cm of blood, either citrated or not. If the hæmorrhage does not cease within two hours the injection should be repeated.

When the infant fails to improve speedily with this treatment, no time should be lost in resorting to intravenous transfusions, for as Holt has emphasized, the infants who die rarely survive more than three days and often less than one.

It has been the experience of most clinicians that preliminary typing of the blood is unnecessary.

The injection may be made into the external jugular vein or the superior longitudinal sinus. The infant's head must be held firmly by assistants and the needle introduced as far posteriorly as possible in the anterior fontanelle to a depth of about 3½ in. The use of this route may be dangerous, but ill effects are unlikely to result if the operator remembers that when the point of the needle is in the sinus the transfused blood should be made to flow with only the very slightest pressure on the syringe piston.

In all cases the blood should be citrated, 10 c cm of 3 per cent sodium citrate solution being added to each 100 c cm, and should be injected at body temperature. The volume that should be injected depends upon the clinical condition of the infant. From 60 to 75 c cm of blood are approximately sufficient to supply the substances necessary for clotting and to replace the cellular elements lost by the hæmorrhage. Horse serum and human serum have frequently proved efficacious, but must be fresh.

It is unnecessary to emphasize the importance of employing the surgical treatment which may be indicated for the control of hæmorrhage. Shock caused by severe blood loss may require intravenous or subcutaneous injections of normal saline solution. Rectal injections of 5 per cent glucose solution have also been used to combat this condition.

All but one of the author's patients recovered.  
R. L. S. CROX, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Lee Brown R. H. The Renal Circulation 1 & S 77 924 1 83

The investigation reported in this article was undertaken to eliminate the existing doubt regarding certain features of the final distribution of the renal vessels. The outstanding points of the controversy seem to be (1) the origin of the rectæ of the medulla and (2) the existence or non existence of a blood supply to the cortex from the renal artery which has not previously traversed a glomerulus.

In 1842 when Bowman published his classic account of the renal circulation he concluded that the cortex does not receive any blood supply that has not previously passed through a glomerulus and that the arteriæ rectæ originate as efferent glomerular vessels.

In the author's investigation a large number of sections from mammalian kidneys, mostly human tissue were studied. It was found that the interlobular arteries may terminate (1) as an afferent glomerular artery to one or more glomeruli (2) by breaking up directly to supply the convoluted tubules in the cortex (3) or as a perforating capsular artery. The trunk of the interlobular artery gives off two series of branches one to the glomerulus and one that is directly nutrient.

The conclusions drawn are as follows:

1 The coarser distribution of the renal vessels conforms to the generally accepted teachings.

2 The afferent glomerular vessels vary in length and have two sources of origin (1) the trunks of the interlobular arteries and (2) the arcuate arteries.

3 Glomeruli consist of a ramification of the afferent vessels converging to form the efferent within Bowman's capsule. They vary in size. Sometimes there are two in glomeruli and sometimes an atrophic artery is discovered.

4 The atrophic or aborted glomeruli are found in close proximity to the medulla and represent glomeruli devoid of capsule whose special function has ceased. They now merely serve as conducting vascular channels from afferent to efferent vessels.

5 There are four distinct types of efferent vessels (a) subcapsular (b) cortical (c) corticomedullary and (d) medullary. Each has its own particular mode of distribution.

6 The arteriæ rectæ originate as efferent vessels from glomeruli situated chiefly in close relationship to the medulla though a small percentage arise as efferent vessels from glomeruli in the corticomedullary zone. These vessels form most of the blood supply of the medulla but a small amount of blood is obtained from the lower branches of the plexus formed by the efferent vessels in the deepest part of the cortex.

7 The arteriæ rectæ are found in some cases but their presence is exceptional.

8 Direct nutrient vessels are of two types. An interlobular artery may end by directly breaking up into a terminal ramification surrounding the convoluted tubules of the cortex (a modification of this is seen in the perforating capsular artery) or branches may be given off from the trunks of the interlobular arteries which after pursuing a short course and showing no evidence of a glomerulus break up into a plexus supplying the tubules.

9 All of the branches of the renal artery are not true end arteries as a return flow may be obtained by way of the posterior division when the organ is irrigated with physiological sodium chloride solution through the anterior division of the artery.

10 The renal circulation is irrevocable.

C. D. HOLMES M.D.

Foley F. E. B. The Diagnosis of Anomalous Renal Artery as a Cause of Upper Urinary Tract Stasis. *M. & S. Med.* 924 1 39

Anomalies of the renal circulation are common. They may be abnormalities in the distribution of the renal artery or branches of the aorta. Since these aberrant vessels cause pressure on the ureter or the kidney pelvis it is obvious that they may often cause hydronephrosis. Therefore it is important that the condition be discovered before serious damage to the kidney has resulted from long continued distention of the pelvis.

Braasch mentions the pyriform dilatation of the pelvis and Crabtree a demonstrable constriction at the ureteropelvic juncture as being characteristic of this deformity. The pyelogram in such cases is often found divided into upper and lower halves with the troublesome vessels coming off of the lower portion of the kidney and constricting the ureter or pelvis at the ureteropelvic juncture. Pain is a common symptom. The urine may or may not contain pus. The diagnosis of anomalous renal artery is made on the basis of retention when all other causes have been excluded by modern urological methods.

C. D. HOLMES M.D.

Crowell A. J. Cystin Nephrolithiasis. Report of a Case with Radiographic Demonstration of the Disintegration of a Stone by Alkalinization. *J. U. & N.* 9 4 545

The presence of a stone in the bladder or a shadow in the kidney in association with cystin crystals in the urine suggest the diagnosis of cystin nephrolithiasis. The cystin may disappear from the urine temporarily. Since cystin is soluble in alkaline solutions it is important to render the urine alkaline and keep it so. Pelvic lavage should be done every



approach should not materially affect the incidence of recurrence. It should be noted however that nephrolithotomy was performed on three fourths of the patients with stone fragments in the kidney which were missed at operation.

That a technical factor is involved is suggested by the fact that in the operations in which a combined nephropielvolithotomy was employed there were comparatively few recurrences (4.16 per cent). The thorough drainage offered by this operation must be taken into consideration.

Contrary to the general impression nephrolithotomy was followed by the lowest mortality only one death in 150 cases. Serious postoperative hemorrhage occurred in only eight cases in four it was so severe that nephrectomy was necessary.

Renal fluoroscopy has been found of decided advantage in limiting the number of recurrences. It permits the exact localization of small or multiple stones without the trauma which so often results from a long continued blind search for small stones or a fragment that has been broken off in the removal of a large fixed stone.

Allemann R. and Bayer R. The Clinical Aspects of Malignant Tumors of the Kidneys (Beilage zur h. n. d. m. g. n. e. r. e. n. t. u. r. o. l. o. g. i. e. ) Zt. f. f. u. r. u. l. o. g. i. e. 93 v. 9

The authors review thirty-eight cases observed during the past nine and a half years. These included twenty-seven hypernephromata, six carcinomata and four tumors that did not come to operation. Even in spite of all modern diagnostic methods an early diagnosis depends upon the concurrence of particularly favorable circumstances. The most suggestive signs are hæmaturia, pain and tumor. In 66 per cent of the cases reviewed the findings made on palpation were positive. In the small number in which they were uncertain it was possible to establish the presence of enlargement of the kidneys by means of the X-ray. For the X-ray examination pneumoperitoneum and pneumoradiography of the bed of the kidney are recommended. According to Becker the coincidence of mobile kidney and gall stone disease often makes the diagnosis of upper abdominal tumors on the right side extremely difficult.

The hæmaturia is characterized by its sudden appearance often years before there are signs of a tumor by its subsequent disappearance for months or years by the fact that nothing will affect its often considerable intensity and by its ultimate cessation. Unfortunately patients at first frightened by such a hæmorrhage are reassured by its sudden disappearance and therefore do not seek medical advice. In other cases blame attaches to the doctor consulted because he does not consider the possibility of a neoplasm. Even when the hæmorrhage is severe the tumor masses may be very small.

The pain is of a type entirely uncharacteristic of new growths. For a long time complaint is made of a dull pain in the loins or the sacral region or of colic

in the course of the ureters which occasionally ceases on the appearance of hæmaturia (hæmorrhage into the tumor mass, clots in the ureters). Whereas colic from calculi usually ceases with rest in bed the colic due to clots continues unchanged. The great variability of the pain is often misleading.

Hypernephrosis is manifested by late appearing cachexia which usually indicates the formation of metastases. In cases of carcinoma and sarcoma rapidly progressive cachexia is noted very early.

In two of the cases reviewed there was varicocele on the same side as the renal tumor. The hyperpigmentation associated with hypernephroma which has been described by numerous surgeons was not observed. Metastases were found in the skeletal system and in the lungs. These are to be regarded as capillary emboli from the renal vein and vena cava and often arouse the suspicion of the presence of a hypernephroma for the first time. An increase in the temperature occurred in five cases. Usually it was associated with an attack of pain preceding hæmaturia.

The presence of tumor cells in the urine was never established with any certainty. A pyelographic examination with the use of 20 per cent sodium bromide revealed the characteristic tortuosity, lengthening and abnormal insertion of the ureters which are associated with tumors of a certain size.

A differential diagnosis between the various malignant tumors of the kidney before operation is out of the question. All cases in which extensive metastases, disease of the second kidney or a poor general condition do not constitute contra-indications should be operated upon.

The authors always attempt first to effect an extraperitoneal exposure by von Bergmann's method. The fatty capsule and all lymph nodes with which are removed. Transperitoneal nephrectomy is undertaken only when the presence of abdominal metastases is suspected.

The prognosis is dependent entirely upon early diagnosis. The authors do not hesitate to perform an exploratory exposure of the kidney when a tumor is suspected and clinical and technical measures are of little aid.

JASSEN (Z)

Dabney M. Y. The Differential Diagnosis of Ureteral Stricture and Chronic Appendicitis. So. th. M. J. 1924 xv: 439

Chronic appendicitis and stricture of the right ureter are both characterized by chronicity, digestive disturbances, pain in the right lower quadrant, tenderness over the right side of the abdomen and lumbar region and a normal or slightly elevated temperature and leucocyte count. In cases of ureteral stricture frequent bladder irritability is present in addition. The diagnosis of ureteral stricture is made by passing a No. 7 ureteral catheter and then examining the ureter with a wax cuff catheter. During this procedure the symptoms of stricture are reproduced.

HARRY W. FLAGGMEYER, M.D.





Prostatic calculi are usually small and multiple and may be mistaken for urinary calculi. They should be rayed in the postero-anterior position.

Hydronephrosis is demonstrated by the injection of an opaque solution into the kidney pelvis.

Renal tuberculosis is generally identified by an irregular outline, variability in the density of the shadows, small shadows which are usually multiple or grouped, and large shadows outlining the renal lobulation over the entire kidney. It must be differentiated from lithiasis. Ordinarily differentiation is impossible without cystoscopy and pyelography. The kidney outline may be enlarged and the kidney may show lengthening with pronounced dilatation of the tubes or a moth-eaten appearance with solution encroaching upon or permeating the cortex.

Tuberculosis of the ureter should be suspected when dilatation of a ureter is found after injection of the bladder for a cystogram. Children show such a filling normally.

Intrinsic and extrinsic kidney tumors cannot be differentiated roentgenologically. A pyelogram showing irregular loss of calyces and distortion of the pelvis may be due to incomplete filling, a tumor, or

cortical growth. The characteristic picture of a kidney tumor is an irregular, prolonged extension of one or more calyces to a point beyond the normal. When the entire kidney is involved the pelvis may be reduced to a small mass with irregular strands of shadows in the form of a spider web. Polycystic kidneys usually show a similar picture with enlargement of the kidney shadow, but the strands are less irregular and the margin is more rounded. The ureter may be long and curving over an enlarged kidney pole and may extend medially within the shadow of the spine.

Tumor of the bladder and hypertrophy of the prostate if of sufficient size will show filling defects in the cystogram.

Diverticuli of the bladder show offshoots or accessory pockets to the bladder. Usually they are connected by a narrow lumen. The roentgenograms should be taken in the direct and oblique positions.

Ureteral abnormalities such as multiplicity, dilatation, kinks, and angulations are demonstrated roentgenologically by opaque catheters or solutions.

Roentgenography is of prime importance in the diagnosis of lithiasis, hydronephrosis, tuberculosis, tumor, and diverticulum. **LOUIS NEUWELT, M.D.**



In the two cases reported in this article electrical excitability was present. Zanolli believes this was not a sign of slight persisting function but the expression of medullary automatism. To explain the influence of the spinal cord on the preservation of electrical excitability of muscles he cites the work of previous investigators.

The pathogenesis of ossifications in paraplegia is obscure. None of the theories already advanced is satisfactory. In the author's opinion a toxic factor must be involved. In persons with paraplegia there are numerous foci and factors favoring the formation of toxic bacterial products which are easily carried into the general circulation. These toxins exert their irritative stimulus especially on tissues with reduced vitality. There is also a chemical stimulus. Decalcification is common in paraplegia and because of the blood stasis the calcium salts are easily deposited. Why these ossifications occur on the psoas muscle as they generally do and why their formation ceases after a time is not known. W. A. BRESNAH.

Makins Sir G. Elmslie R. G. Bristow W. R. and Others. *Discussion on Myositis Ossificans Traumatica*. *Proc. Roy. Soc. Med.* 1924. *Sect. Orthop.* 19.

**MAKINS.** An essential factor in the causation of myositis ossificans traumatica is a lesion of the muscle due to a blow, a strain or overaction. The injury may be trivial.

The sites at which the condition most commonly occurs are within the sheath of the quadriceps extensor of the thigh and the brachialis anticus muscle, but it may develop in practically any muscle attacked to bone.

Ossifications due to occupational injuries such as riders bone or dancers bone and the metaplastic ossifications which invade the muscles in certain forms of disease such as tabes are not true types of the traumatic form.

The term traumatic myositis ossificans should be limited to a condition consequent upon an injury in which the following three factors are associated: (1) an injury to the periosteum or bone sufficiently severe to allow the escape of bone cells into the neighboring muscle sheath; (2) hemorrhage from the bone and surrounding tissue; and (3) an injury to the muscle sufficient to open its sheath.

Macroscopic examination reveals within the sheath and substance of a muscle a mass of newly formed connective tissue surrounding a cancellous base. This mass is intimately connected with the surrounding muscle and usually continuous with the shaft of a long bone. In some instances a synovial-like fluid is found in the bursal spaces in the surrounding tissue and in others the tumor may consist of a large cyst containing fluid. The walls of the cysts are formed of connective tissue and bone.

In the early stage microscopic examination reveals mainly connective tissue in the condition of active proliferation. Scattered in this tissue may be found

chondroblasts and osteoblasts suggesting metaplastic bone formation and numerous bone cells.

The surrounding muscle fibers are in varying stages of degeneration but signs of regenerative changes are seen in the multiplication of nuclei.

The fact that the development of large masses of callus following comparatively trivial injuries to the bones occurs relatively seldom after such injuries indicates that the phenomenon is dependent also upon some special constitutional condition or idiosyncrasy.

The primary treatment in all cases should be complete rest and avoidance of anything apt to increase the vascularity of the affected part. The general tendency of the tumors is to undergo spontaneous absorption.

**ELMSLIE.** It is generally agreed that forcible stretching carried out in the course of treatment after an injury to a joint or muscle is an important factor either in the original production of the ossification or in the causation of exacerbations of the condition. In certain cases ossification may occur in a hematoma. Sepsis is an occasional factor.

In the treatment prolonged rest is important. Early operations are to be avoided as they are almost invariably followed by recurrence.

Operation should not be undertaken until the bone structure has ceased to show variations in consecutive roentgenograms and then should be done only to remove a mechanical obstruction to joint movement. Operation will seldom be necessary before the end of a year.

Case reports are discussed by Bristow, Pugh, Todd, Fairbank and others.

HERMAN C. SCHUMM, M.D.

Ballance Sir H. *An Intramedullary Capillary Angioma of the Shaft of the Humerus Leading to Spontaneous Fracture Treated by Local Resection and Bone Grafting*. *Brit. J. Surg.* 1924. 11: 622.

The angioma reported developed in the patient's thirteenth year of age following a crushing injury to the humerus. While the case was under observation a spontaneous fracture occurred. Ten days later a graft from the fibula was placed in the humerus. X-ray examination eight years after the operation showed that the graft had been absorbed.

The histological picture revealed rarefaction of the shaft and capillary infiltration.

Disability was due chiefly to the loss of humeral substance. There was no apparent recurrence of the tumor.

ROBERT V. FUNSTEN, M.D.

Davenport C. B., Taylor H. L. and Nelson L. A. *Radio Ulnar Synostosis*. *Arch. Surg.* 1924. 61: 50.

Radio ulnar synostosis or congenital synostosis of the proximal ends of the radius and ulna is rare.

In the normal pronated forearm the radius crosses from its position near the lateral margin of the humerus to the radial side of the hand. In proximal

synostosis the radius and ulna are fused in a position of incomplete decussation so that complete supination is no longer possible

The authors report a case of bilateral radio-ulnar synostosis in a boy 9 years of age. The family history revealed that the child's father, one paternal uncle and two of his sons, another paternal uncle and his two sons and a third paternal uncle and his daughter and two sons had bilateral radio-ulnar synostoses. From this case and fourteen others of like nature the authors conclude that radio-ulnar synostosis is hereditary.

The ontogenic defects are of various types. In the first type the radius is strongly curved and the radial head distinct. In the second type which is by far the most common the radial head is absent. In the third type which is called the dislocated head type the head of the radius is well developed but lies in front of the trochlea instead of articulating with the capitulum.

Comparative anatomy demonstrates that the appendages of man are derived from the fins of fishes and the appendicular skeleton is derived from the skeletal support of the fins. The relations of the radius and ulna in the higher vertebrates are variable. In reptiles these bones are distinct while in birds they are fused. Among mammals they are distinct in the monotremata and marsupials. In the ungulates the ulna is more or less rudimentary and in the ruminants is fixed behind the radius. In the horse it is still more reduced. In rodents the radius and ulna are distinct. In the insectivora they are fused distally.

In the human embryo of 3 or 4 weeks the arm buds appear nearly perpendicular to the body axis. Later they become flexed. The arms are turned toward the ventral side of the chest with the radius and thumb cephalad to the ulna.

The radius and ulna arise from a single precartilaginous mesenchymatous plate and although the transformation of this plate into cartilage takes place from two distinct centers the cartilage forming tissue unites them. In cases of synostosis the process of chondrification goes on across this cartilage forming tissue and forms a cartilaginous union. Ossification produces firm bony union.

Persons with radio-ulnar synostoses have other bony defects. All of the members of one family cited were short of stature. Some of those of another family presented numerous exostoses. In a third family several of the members had flat foot. Various other deformities appear such as club-foot, bow leg, club-hand, absence of fingers, etc.

Evidence seems to favor the conclusion that radio-ulnar synostosis is a trait that depends on one, two or three factors, is usually an autosomal dominant and is partially sex limited.

The authors conclude as follows:

1. Radio-ulnar synostoses vary in degree. Two types may be distinguished: (1) the type in which the radial head is absent, the proximal end of the radius being fused with the ulna, and (2) the type

in which the radial head is displaced toward the flexor side of the arm.

2. In man the radius and ulna are frequently united.

3. The radius and ulna develop from the same precartilaginous plate.

4. Abnormal developmental impulses which lead to synostosis are indicated by other defects.

5. Genotypical differences in families vary.

6. Males are twice as apt to be affected as females.

7. Consanguineous matings are found in synostotic families.

8. Radio-ulnar synostosis appears to be a dominant partially sex limited trait.

JOHN MITCHELL, M.D.

**Kroghus A. The Pathogenesis of Muscular Wry Neck.** (*Zur Pathogenese des Muskelkrampfes*) *Acta Chir. Scand.* 1927, 497.

In the author's opinion the anatomopathological process responsible for muscular torticollis which is manifested as a connective tissue or tendon formation at the expense of the muscle tissue having its origin in *perimysium internum* is not the result of an ischemic muscular degeneration. The striking resemblance between this process and the gradual change of muscular tissue into tendinous tissue which occurs in the foot muscles of hoofed animals a long time after birth, the hereditary character of the condition and its association in some cases with other disorders of development suggest that it has its origin in an anomaly of the muscle blastema.

**Moore S. On the Incidence of the Sacralized Transverse Process and Its Significance.** *Rad. 1927*, 924, 87.

Moore has made a comprehensive study of anomalies of the lumbosacral spine. Morbidity of the lumbosacral spine is so common that 99 percent of the patients coming to the Washington University St. Louis X-ray department were sent for examination of the lower spine. Moore believes that low back pain is due to the lumbosacral joint rather than the sacroiliac. In a study of 3,640 plates 117 cases of sacralization or lumbalization were found. A dissection of ninety-two cases revealed six cases of this anomaly. Of these cases 50 percent had the X-ray back or nerve symptoms were present in 6 percent and scoliosis in 5 percent. 5 percent was noted in 3.6 percent. Moore concludes that persons with sacralization should follow occupation free from hard and back strain.

CHEST & C. SCHEIDT, M.D.

**Bearse C. Osteomyelitis of the Ilium in Children.** *Bull. W. B. S. S.* 1924, ex. 883.

Osteomyelitis of the ilium occurs in only 1 from 2 to 7 percent of all cases of osteomyelitis but the ilium is by far the most common site of osteomyelitis in the pelvic girdle.

Trauma is sometimes an etiological factor. In other cases the cause is a distant focus of infection.

and in a third group metastasis following infection of another bone plays a part. The organism most commonly found is the staphylococcus.

Because the ilium is a flat bone early perforation is common. As the disease progresses the perforation may enlarge or several perforations may occur.

The onset may be sudden or insidious and the reaction may be mild or severe. The most prominent symptom is pain in the region of the hip. This is associated with fever, chills, vomiting, and night cries. Tenderness is noted over the affected area. At times the reaction may be so severe as to simulate a general systemic condition without localizing features. At other times the only sign may be a slight limp. On physical examination in acute cases exquisite tenderness over the ilium may be found. The point of greatest tenderness is usually just posterior to the greater trochanter. Spasticity of the muscles of the buttock, tenderness in the groin, and increased local heat are other signs. A careful examination of the hip will reveal motion in the joint which shows that the condition is extra-articular. In chronic cases the roentgen ray will be of help.

The condition is most commonly mistaken for arthritis, sprain, meningitis, tuberculosis of the hip, scurvy, and malignancy.

The most frequent complications are the pocketing of pus, metastatic infection of other bones, and arthritis of the hip. Erosions of the femoral artery and phlebitis of the iliac vein are others.

General hygienic measure for the systemic reaction and general surgical principles for the localized condition constitute the basis of treatment.

BRUCE C. DEWEY, M.D.

No. 6 Josseland and Vignard. A Case of Deforming Osteitis of the Neck of the Femur. (Unpublished.)  
Dostet, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 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anæmic necrosis of the scaphoid a phrase which has little meaning

The authors have recently treated a case in which they were able to make a complete histological examination. They concluded that the process is an attenuated osteomyelitis. W. A. BRENNAN

### SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Pigeon Bernard and Rouvillois Six Cases of Gonorrheal Arthritis Treated by Arthrotomy Combined with Serotherapy (Sérum d'arthrite gonococcique) *té pi larth t m comb é ec l sé thé pi) B l l t m m S at d k 924 1 446*

In three of the six cases reported the knee and ankle were involved and the condition was of the synovial type with a serous seropurulent or purulent intra-articular effusion containing fibrous masses. The general symptoms included fever. Complete recovery resulted. In one case there was acute arthritis of the wrist with diffuse periarticular infiltration and decalcification of the bones but little articular effusion. The functional result was satisfactory. The two other cases represented an intermediate type of arthritis of the knee with considerable articular effusion combined with diffuse periarticular infiltration. A satisfactory functional result was obtained in one but in the other in which both syphilis and gonorrhea were present the treatment failed.

Rouvillois believes that gonorrheal arthritis whatever its anatomical type is a local manifestation of a general infection and that therefore the logical treatment is serotherapy. The serum should be applied to the synovial membrane. In some cases arthrotomy may be necessary for its proper application.

Arthrotomy is not always essential but is often indicated to relieve a joint of its contents especially purifibrinous plaques which encumber and enclose the joint and to expose inaccessible diverticula. It is better than puncture for the introduction of serum; it renders the joint condition visible and it favors early mobilization. It is particularly indicated in cases with marked effusion and distention. In acute arthritis with periarthritis and slight or no effusion its advisability is questionable but it gave a good result in the author's case of wrist involvement of this type. The intermediate types of arthritis with abundant effusion and periarthritis and the purely synovial types are suitable for arthrotomy. The arthrotomy wound should be sutured primarily except in the frankly purulent cases in which the wound should be left open and Willem's immediate active mobilization should be instituted. Also in cases of closed arthrotomy wounds early active motion is preferable to passive motion. A successful result depends to a considerable degree upon physiotherapy begun early and continued for some time.

WALTER C. BURKE, M.D.

Fouilloud Buyat The Evolution and Treatment of Juxta Articular Tuberculous Lesions (Évolution et traitement des lésions juxta-articulaires tuberculeuses) *Rev d'orthop 1924 xxx 113*

In cases of juxta-articular tuberculosis the principal lesion is a focus limited to one of the osseous extremities; the other extremity or extremities remain normal. The author has collected thirty-four cases. Of the twenty-eight which were treated surgically the lesion was near the knee in sixteen, the tibio-tarsal articulation in two, the elbow in eight and the wrist in two. Nine were operated upon before the joint became involved; in five of these recovery resulted from one to four months after a single operation. In the four others the joint was protected but recovery was greatly delayed, being obtained only after several operations.

The beneficial effect of operation was especially evident in a series of cases in which after operation there was regression of already present articular symptoms. However in some cases of this kind synovial involvement not clinically evident at the time of operation made its appearance later in spite of the removal of the diseased soft parts. In four cases of this kind in which the lesion was near the knee the initial symptoms did not appear until at least a month after the operation. It is very probable that the synovia were infected in spite of the absence of clinical signs and that the operation was effective by suppressing the causative bone lesion.

In four of the twenty-eight cases operated upon severe arthritis developed. In two of these there was an articular reaction at the time of operation. Therefore prudence is necessary in giving the prognosis of juxta-articular lesions.

Many severe cases of arthritis are cured after the removal of the causative lesion but some continue to progress despite operation.

In the six cases reviewed which were not operated upon but were treated by orthopedic methods good progress and an excellent functional result were obtained. Orthopedic treatment may be applied to suppurative cases in which surgery is usually contraindicated. W. A. BRYAN

Serra G. Direct Neurotization of Muscle (La névrotisation directe du muscle) *Chirurgia 1924 30*

The surgical treatment of paralyzed muscles is based upon operations on the nerves and muscles and tendon plastics.

The author reviews experimental and clinical work on direct neurotization of muscle and reports the results of a number of experiments on rabbits in which he paralyzed by neurectomy. The objects of his investigation were: (1) to check up findings of others; (2) to find the best point for nerve implantation in muscle from the standpoint of function; (3) to determine whether part of a nerve is sufficient for the neurotization of muscle; (4) to determine whether direct neurotization is possible by means of free autoplasmic and homoplasmic transplants; and (5) to determine

mine the length of time required by an enervated muscle to become neurotized. The conclusions drawn from the results are the following:

1. Direct implantation of a motor nerve is very effective in restoring function even when the muscle has been paralyzed for some time (in rabbits a maximum of one hundred and thirty-six days).

2. A section of about one-half will meet trophic and functional requirements.

3. The same result can be obtained with an autogenous or homologous transplant of nerve as is given by a neighboring healthy nerve implanted directly.

4. The point of implantation of the nerve in the muscle is of little importance with respect to the ultimate result. It makes no difference whether the implantation is made at the origin, at the point of entrance of the nerve, or in the middle of the mass of the muscle, but the effect appears to be less definite when the implantation is made in the vicinity of the tendon expansion.

In conclusion Serra states that various factors will limit the general use of this method. In order that a motor nerve may be mobilized easily and its utilization will not mean a loss in other important muscular regions the paralysis must be limited to one muscle or to two neighboring muscles. The method of direct nerve implantation does not interfere with suture and plastics of nerves, but it becomes the method of choice when the peripheral stump of a paralyzed nerve cannot be traced or is so altered that it is unfit for use.

W. A. BRENNAN

Rocher H. L. Arthrodesis of the Shoulder in the Treatment of Paralytic Loose Shoulder (L. throdèse de l'épaulade leti me t d l'épaule bilante par lytique). *Revue de chirurgie* 94, 21, 93.

The author has performed arthrodesis of the shoulder in four cases. In three it was done for paralysis of the shoulder following acute poliomyelitis and in one for congenital stiffness with deltoid aplasia. One of the operations for paralysis was performed too recently to warrant conclusions as to the end result. In the other two cases the results have been excellent. Osseous ankylosis has been obtained and function is as satisfactory as could be expected. The author discusses only the cases of paralysis.

Of the thirty-one cases of arthrodesis of the shoulder reported in the literature, twenty-eight had a good result and five an unsatisfactory result.

The various types of operation are discussed. Rocher does not see any advantage in osteosynthesis with metallic wire for if there is bone fusion the wire is of no value and if bone fusion fails the wire does not overcome the functional disability.

W. A. BRENNAN

Waldenstrom H. The Treatment of the Tuberculous Kyphosis by Osteosynthesis After Gradual Correction. *Acta Orthopædica* 1924, 1: 463.

In the last ten years the author has treated eighty cases of tuberculous kyphosis by a special method

consisting of two stages: (1) gradual and complete correction of the kyphosis by the application of pressure while the patient is lying on his back in a Lorenz plaster of Paris bed (Finck) and (2) fixation of the corrected diseased segment of the spine by means of a straight tibial graft (Albee). This method, which he calls osteosynthesis after gradual correction, is supplemented by general treatment for the tuberculosis including wholesome food, sunlight and fresh air.

Children with tuberculous spondylitis who come to be treated during the developing stage of the tuberculous process should never be operated upon directly but should be kept in the Lorenz plaster bed until the tuberculous process in the vertebrae is checked (one or two years after the first appearance of the symptoms). This is advisable in order that the extent of the tuberculous process may be known and the length and thickness of the graft adapted to it also in order that the pressure between the tuberculous vertebrae may be neutralized and the kyphosis then corrected so completely by very gradually increased and painless pressure that a straight tibial graft may be implanted.

The treatment described gives a straight back and an excellent functional result in 80 per cent of the cases.

The operation is performed only if two or more vertebrae are infected. In cases of less extensive tuberculous process it is possible by means of a corset to prevent the corrected kyphosis from reappearing. This is seldom possible when there is extensive destruction of the vertebrae.

Children under 5 years of age should not be operated upon. They should be kept in a plaster bed until they are 5 years old, even if the kyphosis is corrected and the progress of the tuberculous process has been checked. Operation is contraindicated also in the cases of debilitated patients and cases with fistula.

Before the operation the infected vertebral bodies should be carefully localized in relation to their pinous processes as the final result is dependent chiefly on osteosynthesis on the infected vertebrae and on two (sometimes three) vertebrae above and two (or one) below them.

Careful attention must be paid to the postoperative treatment as the strain on the graft will be much greater in these corrected cases. After the operation the patient should be in his plaster bed for two or three months during which time the pressure on the corrected segment should be continued.

At the end of that time he should be given a plaster corset to wear for another two or three months and the pressure should be continued by means of cotton wadding. During this period he will gradually learn to walk. Finally he should be given a cloth corset with fixed steel rods to wear for one or two years.

This method of treatment is being carried out in a special hospital.



Tengwall E. Two Cases of Osteosarcoma in One of the Long Bones of the Knee Joint with Large Resection of the Bone. *Acta Chir Scand* 1924 11: 403

The author gives an account of two cases of sarcoma in one of the long tubular bones of the knee joint in which by extensive resections of the distal femur and knee joint it was possible to preserve both the leg and the foot.

CASE 1 was that of a man 45 years of age. A complete extracapsular resection of the knee joint including 20 cm. of the femur was done and the end of the femur was forced into the scooped-out upper end of the tibia. The pathological diagnosis was giant cell sarcoma. Examination two years and two months after the operation showed complete healing of the bones. The leg operated upon was 21 cm. shorter than the other but there was full mobility of the hip and foot joints and the patient was able to walk well with the aid of an extension boot.

CASE 2 was that of a woman 34 years of age. The pathological diagnosis was large-cell highly mitotic sarcoma showing in some areas numerous giant cells. The author resected the knee joint and the distal upper end of the tibia including the immediately surrounding soft parts to the extent of 12 cm. The upper portion of the fibula was then denuded the head of the fibula sawed through in an antero-posterior direction the fibula fitted into a groove chiselled out in the posterior portion of the external condyle of the femur and the tibia fitted into a cavity chiselled in the intercondylar fossa of the femur. Eight months after the operation no recurrence could be detected either clinically or with the X-ray. The patient's general condition was excellent and she had gained 8 kgm. in weight. The leg operated upon was 17 cm. shorter than the left leg but the patient was able to walk very well with the aid of an extension boot and a cane. A year after the operation a recurrence developed and two months later death resulted from sarcomatosis.

Fieschl D. Substitution of the Fibula for the Tibia (Transplantation of the Tibia). *Chir. d. d. m.* 1924 3

Fieschl states that the operation of transplanting the fibula in the place of the tibia should be termed the Hahn-Codivilla operation as Hahn devised it in 1883 and Codivilla systematized its application in 1907.

This article reports the histories of five cases subjected to the operation. Case 1 was that of a 16-year-old girl one of whose tibiae with the exception of the epiphysis was removed surgically on account of bone disease. Case 2 was a case of compound fracture of the tibia with extensive destruction of the soft parts in a child 7 years old. Cases 3 and 4 were cases of extensive osteomyelitis in children 14 and 8 years old respectively. In Case 4 that of a boy aged 20 years urgent removal of most of the tibia was necessary because of a severe fracture with fistula formation.

In all five cases excellent functional and aesthetic results were obtained. The X-ray showed that the fibular graft became hypertrophied.

In Fieschl's opinion the problems of severe and extensive osteomyelitis of the tibia are solved definitely by the application of a fibular graft. The operation is particularly applicable however to traumatic cases such as Case 2. In this connection attention is called to the danger of late infection in traumatic cases showing all the signs of a complete cure.

In children effort stimulus and the stimulus from the complementary zones of the superior tibial extremity favor the continuation of fibular growth.

The operation described is recommended especially to the consideration of the general surgeon.

W. A. BRENNAN

## FRACTURES AND DISLOCATIONS

Campbell W. C. Fractures of the Humerus. *Am. J. Surg.* 1924 27: 149

The treatment of fractures of the humerus is of unusual interest on account of the impossibility of effecting complete immobilization. Nonunion occurs more often in the shaft of the humerus than in any other long bone.

Campbell's paper is based on 314 fractures, 131 in the lower end of the humerus, 36 in the head and 147 in the shaft. Of the 147 fractures of the shaft, seventy-three occurred in the upper third, thirty-six in the middle third and thirty-eight in the lower third. In the upper third the powerful pectoral muscles displace the distal fragment forward and inward. In the middle third the deltoid displaces the proximal fragment outward. In the lower third the distal fragment is displaced forward by the force of gravity through the weight of the dependent forearm. The condusion of the musculospiral nerve is regarded as an important factor but the danger of permanent injury to this nerve is probably overrated.

The fracture may be spiral, oblique, transverse or comminuted. In the upper third transverse fractures predominate. In the lower third they constitute 50 per cent of the fractures. Spiral fractures occur most frequently in the middle third. Comminution is most common in the middle and lower thirds. Compound fractures are by far most frequent in the lower third. In only one of the cases reviewed was there a permanent injury to the musculospiral nerve. Of the seventeen undisplaced fractures four were compound.

The treatment of fractures of the humerus does not differ from that of fractures of other long bones except that the problem of fixation is more difficult. It is not always possible to obtain complete approximation of the fragments but 50 per cent is sufficient to restore perfect function. If a plaster cast is used after reduction it should extend from the palm of the hand and down the body to the crest of the ilium. The elbow should always be flexed from 90 to 120 degrees. If there is angulation felt pads may be

employed with pressure to maintain alignment. Under no circumstances should the elbow be placed in extension especially in fractures of the lower third as this position throws the lower fragment forward in dangerous proximity to the brachial artery. If the deltoid is antagonistic the shoulder should be abducted if the pectoral are antagonistic the humerus should be rotated inward. In the majority of cases the author employs a simple traction splint, a modification of the splint advocated by Henderson.

Adhesive straps are applied to the arm from the point of fracture to well below the elbow. After adjustment of the splint and sufficient traction these straps are attached to the steel bar. This apparatus is well adapted to fractures of the upper and middle third and of value in convalescence from fractures of the lower third.

Open reduction is seldom necessary in single fractures. In every case of fracture the apparatus applied should be removed for inspection before consolidation is complete in order that deformity may be corrected. As soon as union is well advanced the splint should be removed for daily massage and active and passive motion.

When a fracture reaches the stage of permanent pseudarthrosis only operative measures are indicated. The autogenous bone graft alone is worthy of consideration as a means of internal fixation as it is well tolerated and promotes osteogenesis.

In the author's cases an ample incision is made for exposure with routine dissection and removal of all intervening scar and fibrous tissue. The fragments are pared and each medulla is reamed out until normal tissue is reached. An incision is made through the periosteum on either fragment to several inches and the periosteum stripped back from  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in the circumference. With a chisel shavings are removed until a continuous flat surface has been formed. From the tibia is taken a massive graft of the desired length and this is split longitudinally to form a thin inner strip of endosteum and a heavier outer plate of cortex. The strip of endosteum is placed in the medulla so that it bridges the site of fracture. From the outer plate strip is removed to provide six or eight autogenous bone nails. The remaining portion is held to the flat surface of the bone fragments to bridge the fracture. Drill holes are made and fixation is obtained by the insertion of square pegs in the round holes. In addition chromicized catgut sutures are passed around the bone and graft. Any remaining endosteum is broken up into small shavings which are applied to the site of fracture.

External fixation is left in place for eight weeks. For six weeks a light brace is worn.

To carry out this tedious procedure a team of trained associates and a most rigid instrumental technique are essential. It is not a one man operation. It was used in twelve of the author's sixteen cases of ununited fracture and was very successful.

R. C. LOVE, CHAS. MD

## Speed R. Fracture of the Head of the Radius Am J S 1924 xxviii 57

Fractures of the head of the radius may be complete or partial. Complete fractures are further subdivided into (1) partial or marginal in which one or more fragments are dislocated and (2) total including comminutions or crushings with deformity of the head. In incomplete fractures there are fissures which usually extend into the neck, the fragments remaining more or less in contact.

Fractures of the radius occur most commonly in adults and seven times more frequently in males than in females. Associated with them are other injuries which often are so magnified that the fracture is not diagnosed.

In the order of decreasing frequency the lesions of the arm are: fracture of the upper shaft of the ulna; fracture of the coronoid or olecranon process or of both; fracture of the lower end of the humerus; fracture of the radius at any level; dislocation of the head of the radius and dislocation of both forearm bones.

Fair retention of the normal configuration of the radial head is essential to the function of the elbow joint. For its rotary motion it must be perfectly round to fit into the radial notch of the ulna where it is held by the annular and capsular ligaments.

In almost all fractures the shape of the head is changed and when callus is thrown out the head becomes so thickened that pronation and supination are lost. As joint motion is restricted the capsule undergoes shrinkage and interferes further with the full use of the elbow. Associated lesions are frequent complications.

In cases of isolated fractures the patient usually holds the arm in well with the hand in 90 degrees of flexion but is able to flex and extend the arm without pain. As a rule swelling and ecchymoses are delayed two or more days. The fracture can be diagnosed because the patient hesitates to supinate or pronate the forearm. Supination causes particularly severe pain referred to the head of the bone. There is exquisite tenderness over the head and crepitus may be felt when the radius is rotated.

The course of these injuries is progressive loss of function. In neglected cases ankylosis of the elbow frequently results. In the cases of children and adolescents operation is contra-indicated. By direct pressure the fragment may be forced up into more or less normal position and the arm held in complete flexion. After from twelve to fourteen days active motion is begun especially to re-establish pronation and supination.

In the cases of adults unless the fracture is a mere crack a section of the head is indicated primarily. Thenceforth this is done after the diagnosis the better the function.

Speed rules are as follows:

- 1 Remove all broken and fragmented pieces wherever they be in the joint.
- 2 Remove enough bone to insure freedom of motion.

3. Avoid injury to the capsules
4. Be sure to have the annular ligament intact as this helps to preserve the joint contour
5. Spare the radial nerve and the insertion of the biceps tendon
6. Close the joint snugly
7. Maintain the arm in a position of flexion and full supination by means of a molded plaster-of-Paris splint for from five to eight days. Then remove all splintage and encourage active movement.

R. C. LONGBRYN, M.D.

Manon M. Fractures of the Trapezoid in Wrist Injuries (*Lésions fractures du trapezoïde les traumatismes du poignet*). *Rev. d'Orthop.* 1924, 2, 127

Trapezoid fracture in wrist injuries is rare. From a study of the joint movements and a review of the reported cases Manon has come to the conclusion that fracture of the trapezoid is due to radial hyperinclination of the hand associated with dorsal flexion of the wrist.

The case reported in this article was that of a man who fell from a car on his right hand. There was moderate swelling at the middle of the wrist with an elevation in front of the long abductor tendon of the thumb. The projection was painful on pressure and

when it was reduced it reappeared. Traction on the thumb in abduction reduced the mass momentarily. The X-ray showed a vertical fracture of the external tuberosity of the trapezoid with outward angulation of the fractured fragment. The thumb in the position of abduction was subjected to continuous extension for twelve days and the apparatus then removed. Complete recovery resulted after two months.

W. A. BRENAN

Langdon J. F. Traction Fracture of the Lesser Trochanter. *Arch. Surg.* 1924, 2, 8

Langdon reports two cases. Only twenty five are recorded in the literature. Langdon's cases were those of boys 12 and 16 years old. In both the injury was sustained in running.

The condition occurs principally in youths before the epiphysis of the lesser trochanter is firmly united. The cause is a sudden strain on the iliopsoas muscle causing avulsion of the lesser trochanter. Pathognomonic sign is inability to flex the affected limb in the sitting position which is due to the fact that the iliopsoas which produces this motion is detached from the femur. The treatment is immobilization with the hip flexed and abducted.

BEVERIDGE H. MOORE, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

**Bull P** A Diagnosed Embolus of the Left Renal Artery Nephrectomy Sudden Death *Steen*  
*Dys After the Operation (Dysgostic Embolus der linken Arterienals Nephrektomie Mors ub tan 16 Tg h der Ope tio) Zi h f of Chf 1943 21*

The onset of the disease was acute as in nephrothiasis with strangury and colic. Later the pain ceased. Loss of function of the left kidney was determined by ureteral catheterization and a test with indigocarmine. The renal pelvis which contained 7 ccm of urine could be easily catheterized. The diagnosis of embolus was made because of a coexisting mitral stenosis. Death resulted from thrombosis of the stenosed mitral opening. The author believes that the nephrectomy performed in this case was justified by the possibility of a rupture and aneurism of the renal artery. *Eckstein (Z)*

**Thompson J E** Aneurism of the Iliac and Femoral Arteries *A S f 924 Ann 884*

The author reports three cases of aneurism of the iliac and femoral arteries which are of unusual interest.

The first was a traumatic arteriovenous aneurism of the femoral vessels in the middle portion of Hunter canal. Both the femoral artery and the terminal branch of the profunda femoris communicated directly with the femoral vein by separate fistulous openings. Most of the arterial blood from the femoral artery was passing through the opening into the femoral vein and thence proximally toward the heart producing a very feeble circulation in the leg distal to the lesion.

At operation it was planned to make a transvenous suture of the fistulous opening into the artery but because the case was some question as to the efficiency of the collateral circulation in this procedure was abandoned and instead the femoral artery was merely ligated proximally and distally to the fistulous opening. The result was surprisingly favorable even though the operation failed to shut off every avenue of communication between the arterial and venous channels. Some arterial blood was still flowing from the profunda or one of its branches into the femoral vein. The condition of the foot improved rapidly the ulcer healed up and the patient was discharged at the end of two months able to walk without discomfort.

The presence of such an aneurism places an extra burden on the heart to keep up the circulation and blood pressure in the foot. Cardiac hypertrophy and dilatation often result.

The second case was a case of spontaneous aneurism of the external iliac artery and the upper portion

of the femoral artery which was completely consolidated proximally but open distally from the origin of the profunda. At operation the external iliac artery and vein were exposed retroperitoneally and ligated the femoral artery and vein were ligated in the upper third of the thigh and the entire aneurism was removed. The patient made a good recovery but a troublesome edema always persisted. The author believes that in this case it would have been wiser not to operate as the aneurism could probably have cured itself and undergone complete consolidation and under such circumstances the femoral vein would have been kept intact and the intense edema of the leg would have been avoided.

In the third case there was a spontaneous aneurism of the distal portion of the common iliac artery and the entire length of the external iliac artery. As ligation of the common iliac trunk (left) six months previously had failed to effect a cure the right internal iliac artery was ligated with the hope of cutting off the anastomosis between the branches of the right and left internal iliac arteries. This procedure also was unsuccessful. At a third operation an attempt was made to ligate the femoral artery above the origin of the profunda. The profunda came off unusually high just below Poupart ligament and in the attempt to ligate the femoral artery which was very friable the aneurismal sac was opened and a severe hemorrhage resulted. In order to control the proximal circulation on the abdomen was quickly opened and the aorta compressed with a temporary ligature. The compression of the aorta failed to stop the pulsation in the sac. It was then necessary to open the aneurismal sac widely without control of the proximal circulation. After considerable difficulty the neck of the sac was ligated and the bleeding was stopped by ligation of the internal iliac trunk.

After ligation of the common iliac artery (left) blood passes to the lower extremity on the same side through the lumbar branches of the abdominal aorta through the circumflex iliac and middle sacral and through the superior and inferior epigastric arteries. The internal iliac artery can be tied without causing any serious disturbance in the circulation in the parts of the body it supplies and without danger to the life of the lower limb. Under certain conditions blood may flow along the internal iliac artery in either direction because of its rich anastomosis.

*CYRIL GLASPEL M D*

**Keller W L** Combined Extirpation and Obliteration in the Treatment of Varicose Veins *Ann S f 1944 Ann 907*

Soldiers are very prone to develop varicose veins because of the nature of their occupation. The

presence on a soldier's body of the linear scars which follow the usual operation for varicose veins is objectionable because they may prove a source of irritation under the leggings they may be painful if some of the cutaneous nerves are caught in the scar tissue they may interfere with the full freedom of locomotion because of the formation of adhesions between the cutaneous tissues and the underlying muscle planes and they may offer an excuse for malingerers.

For these reasons the author set about to devise a procedure which would effect a cure without leaving a series of linear scars.

Essential for the cure of varicose veins is complete obliteration of the lumen of the vein and of all of its connections with the deep circulation. It is questionable whether or not it is necessary to remove the varicose vessel itself. The author's method of treatment is as follows:

The varicose veins are outlined with a 5 per cent alcoholic solution of brilliant green while the patient is standing. The first step consists in the removal of the internal saphenous and other non-tortuous veins by the inversion method which is practically the same as the well-known Mayo vein stripping operation.

The second step consists in passing a continuous suture of strong braided silk No. 1 or 2 under the vein and out the oppositeside and then back in front of the vein subcutaneously and tying it at the starting point after it has encircled the entire vein. From this point the suture is continuous passing through the vein for a distance of 4 or 5 in. and then passing around the vein completely.

Such a suture includes all small lateral branches entering the main vessel and effects complete collapse of the vessel walls. The injury to the intima by the needle and ligature pressure insures almost complete obliteration of the dilated lumen. All sutures are removed on the tenth day.

Some of the advantages of this method are its simplicity, the absence of scarring following the operation, obliteration of the vessel lumen which renders recurrence impossible, and the absence of painful subcutaneous areas. It is applicable when other methods cannot be used because of marked tortuosity of the vein or a friable condition of its walls. While it is more time consuming than other types of operation its final results are more satisfactory. C. J. GLA. L. M. D.

### BLOOD TRANSFUSION

Rosenthal N. and B. H. G. Paradoical Shortening of the Coagulation Time of the Blood After the Intravenous Administration of Sodium Citrate. *A. J. Surg.* 94: 535.

Sodium citrate when administered intravenously in large doses produces a pronounced and progressive shortening in the coagulation time of the blood which usually reaches its maximum within one hour and may persist for many hours. The coagulation

time then slowly returns to normal within twenty-four hours.

This action *in vivo* is the opposite of that occurring *in vitro*. It is probably dependent on some effect on the blood platelets. The latter are not directly destroyed by the citrate but are damaged by contact with it. They are then removed from the circulation by the spleen and other organs and destroyed their thromboplastic contents being gradually liberated into the circulating blood. This theory is based on the following observations:

1. In the test tube sodium citrate does not destroy the platelets but affects them so that they are preserved and are therefore more easily counted.

2. Within a few minutes after the intravenous injection of sodium citrate the number of blood platelets often begins to decrease. The maximum reduction is usually observed after from ten to fifteen minutes. As a rule the number returns to normal after from one-half to one hour.

3. As the coagulation time is shortened increasing amounts of free thromboplastic substance probably derived from the platelets appear in the blood stream.

4. No changes in the other factors concerned in coagulation such as calcium fibrinogen and anti-thrombin are demonstrable.

5. The increase in the thromboplastic agent cytazyme and the shortening of the coagulation time do not occur simultaneously with the numerical change in the platelets but follow it. The maximum shortening in the coagulation time occurs some time after the number of platelets has again returned to normal and persists for hours.

6. The characteristic shortening of the coagulation time after the intravenous injection of sodium citrate does not occur in animals in whose blood there are few or no platelets. If a sufficient amount of citrate is given the opposite effect is produced in such animals and the coagulation time is markedly prolonged.

7. The shortening of the coagulation time fails to occur also in human beings with hemorrhagic diseases characterized by a pronounced numerical deficiency in the blood platelets.

On the basis of these observations the slow intravenous injection of sodium citrate in large doses has been employed to arrest hemorrhages due to gastric ulcer typhoid fever pulmonary tuberculosis and other bleeding conditions not accompanied by diminished or diseased platelets.

In hemorrhagic diseases the use of sodium citrate is strictly contraindicated. S. W. L. KAHN, M. D.

Walterhoef and Schramm. The Treatment of Pernicious Anemia by the Reconstitution of Marrow from the Long Bones. (*D. B. H. d. g. d. p.*)

5. An. du. b. Enim. ku. g. R. hrk. o. h. ) *A. J. Surg.* 94: 194, 196.

The remission frequently produced in pernicious anemia by the administration of a certain well-known leukocyte effect of blood transfusions. In

some cases splenectomy has proved of benefit but the operation itself cannot be the cause.

Assuming a relationship between the spleen and the disease the authors set about to discover whether the same effect could be obtained by attacking another part of the hematopoietic system. They therefore removed bone marrow from the long bones since experimental investigations have yielded evidence of an influence exerted by the marrow on the spleen and there are indications that the spleen may act vicariously for the bone marrow. Their technique was reported in full in 1921. In this article slight modifications adopted since that time are described.

The operation was at first considered indicated only for patients who did not respond to any internal therapeutic measures but later the indications were somewhat increased. Originally a single medullary bone was selected but later when it was found how well the operation was borne the marrow was sometimes removed from several bones at one time. Three cases are reported as examples of complete remission ascribed solely to the operation and three cases in which remissions were incomplete and of short duration but resort was had to transfusions, arsenic or further marrow removal when the condition became worse. Finally two cases are described as examples of operation combined with the use of arsenic and transfusions in both a complete remission occurred.

In two and a half years this operation was performed on twenty-three patients. After a two-year period of observation good results were found in 48 per cent of the cases. It seems possible to rule out an accidental relationship between the remissions and the operation.

From the outcome in cases refractory to medical treatment the authors conclude that removal of bone marrow has a definite indication and an important place in the treatment of pernicious anemia. The results are the same in pernicious anemia as under normal conditions. Regeneration is extensive completely filling the demineralized zone. All grades of leucocytic and erythrocytic development are found. Accordingly there can be no question of an anatomical insufficiency of bone marrow in this disease. The investigators believe that the explanation of the benefit derived from this operation lies in the stimulation which is produced by the removal of the bone marrow and increased by the subsequent regeneration. The article is summarized as follows:

1. In pernicious anemia a remission may be produced by removal of the marrow of long bones.

2. Removal of bone marrow is indicated if medical treatment causes no improvement in the clinical picture or effects only an incomplete remission.

3. Since the ability of the organism to react to internal medication is regained as the result of the operation the effect of the operation may be increased by the systematic combination of marrow removal and the previously ineffective measures.

4. In pernicious anemia removal of a part of the marrow from a long bone is followed by regeneration

in which both the blood-forming elements and the connective tissue take part. The cellular marrow is formed from all of the bone marrow elements of leucocytes and from all developmental stages of erythrocytes.

5. There is no anatomical insufficiency of the bone marrow in pernicious anemia.

6. The influence of the operation on the clinical picture of pernicious anemia consists in a stimulation and the maintenance of this stimulation by regeneration.

WALTER H. NADLER, M.D.

Lewisohn R. Citrate Method of Blood Transfusion After Ten Years. *B. S. J.* 1924, c. 733.

The only true direct transfusion of blood is accomplished by vessel anastomosis by direct suture or by means of a cannula which brings the intima of the donor's vessel in direct apposition with the intima of the recipient's vessel. This method was the procedure of choice until about twelve years ago. Since then it has been supplanted by other methods because of its very difficult technique, the fact that the donor's vessel must be exposed and cut, and the impossibility of determining exactly the amount of blood transfused.

The indirect methods of transfusion are the following: (1) cannula method (Bernheim), (2) syringe-cannula method (Lindeman), (3) paraffinized glass cylinders (Kimpton and Brown, Vincent, Leroy), (4) stop-cock method (Unger, Miller, Bernheim), (5) citrate method.

In the syringe-cannula method an 8-cm. cannula coated with paraffin is interposed between the vessels.

The syringe-cannula method represents the first step toward simplification of the technique of transfusion but is little used at present as it requires a well-trained staff of at least three persons.

The paraffinized glass cylinder method devised by Kimpton and Brown and modified by Vincent is a good method in the hands of experts. The proper coating of the cylinders requires considerable skill.

The most popular of the stop-cock methods was devised by Unger. The chief objection to it is that the donor and recipient must be brought close together.

The author's experience is based entirely on the citrate method which he believes is the simplest of all.

As far back as sixty years ago attempts were made to find an innocuous anticoagulant. At that time sodium phosphate and sodium bicarbonate were tested but when they were given in doses sufficient to prevent coagulation they were toxic. For the same reason the use of hirudin which was tried by the author was abandoned.

Animal experiments with sodium citrate showed that a 0.15 per cent mixture with the blood is sufficient to prevent coagulation and is entirely harmless.

The technique of blood transfusion by the citrate method is simple. Only one step in the procedure requires a certain amount of skill, namely the proper

insertion of a good sized cannula into the vein of the donor. The proper execution of a citrate transfusion depends on rapid flow of the donor's blood into the glass jar containing the citrate solution. If the blood and citrate solution mix rapidly no clots—not even minute ones—will form.

The extreme simplicity of the citrate method has on inherent danger. It was formerly thought that anyone who had performed a phlebotomy or who had given an intravenous saline infusion could transfuse citrated blood successfully. Therefore in many hospitals citrate transfusion were turned over to inexperienced men whereas the other much more complicated indirect method were always used by experts. As a result a number of clinics reported many mortalities following the use of the citrate method than following the use of the other indirect method. When at the Mt Sinai Hospital New York the transfusions were taken out of the hands of the personnel men the incidence of deaths was reduced from 34 to 8 per cent in the use of the Langer method and from 23 to 13 per cent in the use of the citrate method.

The slightly higher incidence of chills following the citrate method as compared with the Langer method is probably due to chilling of the blood during the transfer from the donor to the recipient but this disadvantage is outweighed by the greater simplicity of the citrate method. It is evident that the sodium citrate itself is not responsible since in a large series of cases Neubel and Hirschel injected from 6 to 8 gm of sodium citrate intravenously (dose more than five times that used in the average citrate transfusion) without causing chills in a single instance.

It is not advisable to sterilize the glassware and tubing immediately before the transfusion as given heat causes coagulative changes in the blood with subsequent chills.

In the author's opinion the deaths attributed to citrate transfusion are due undoubtedly to faulty technique, wrong inclusions or errors in the tests for hemolysis and agglutination rather than to the citrate.

Unger claims that citrated plasma has anticomplementary power and that sodium citrate increases the fragility of the red blood cells and decreases the phagocytic power of the white cells. If these were true the citrate method would be contraindicated in a large number of conditions in which it has given excellent results. In recent investigation Mellon, Hastings and Casey found an anticomplementary power in citrated plasma but no effect exerted by the sodium citrate on either the red or the white cells.

The best proof of the harmfulness of citrated blood is its beneficial use in melanconic anemia. The author has injected between 80 and 200 c.c.m. of citrated blood in more than a dozen cases without causing any untoward symptom.

A citrate transfusion in the newborn infant illustrates also the great advantages of the method from

the point of view of technique. It is not necessary to resort to the longitudinal sinus a rather dangerous approach nor to expose the external jugular vein a procedure which leaves a disfiguring scar. Lewishohn has never experienced any difficulty in entering a fine cannula into the median cephalic vein and he has never seen clots occur in the cannula. The other methods are all based on rapid injection of the blood before coagulation occurs. Therefore they cannot use the median cephalic vein.

In cases at the Mt Sinai Hospital in which the stopcock method was used after the citrate method had failed to effect a cure the result of the injection of uncitrated blood were no better than those of the citrate method. The failure to obtain a good clinical effect was therefore due to the underlying disease rather than the method of transfusion.

One of the most interesting phases of the chemical action of sodium citrate on the blood is the shortening of the coagulation time. It might be assumed that following the injection of an anticoagulant into the blood stream the coagulation time would increase but on the contrary it is markedly shortened. This shortening is transitory the coagulation time returning to normal in a few hours. Neubel and Hirschel have attempted to use sodium citrate as a hemostatic by injecting from 6 to 8 gm intravenously but the results do not seem very encouraging. Doses of this size are toxic unless they are injected very slowly. The shortening of the coagulation time is based on the action of the sodium citrate on the blood platelets. The latter show an immediate diminution due to the withdrawal from the systemic circulation of 85 per cent of their number. After having been in contact with the sodium citrate they resusculenly and rapidly removed from the circulation probably by the spleen and then destroyed. Their destruction is followed by a discharge into the blood of their contents the thromboplast substance cytolytic with the resultant shortening of the coagulation time. Simultaneously fresh blood platelets are mobilized.

In spite of the contention of Roth and Baehr that the intravenous injection of sodium citrate is contraindicated in hemorrhagic diseases the author and others have given many transfusions by the citrate method in purpura and hemophilia with constantly good results.

With regard to the selection of donors the author calls attention to the fact that a recipient may change his blood group after a transfusion and that therefore he should be tested again before a second transfusion is given.

In acute leukemia, acute sepsis and inoperable cancer blood transfusion is useless and not without danger.

In conclusion the author summarizes the results of 365 transfusions given in 269 cases. Seventy-four of the patients were cured, forty-four were benefited, eight were not benefited, six cannot be traced and 235 are dead.

WILLIAM A. HENDRICKS, M.D.

## LYMPH VESSELS AND GLANDS

Pfahler G E and O Boyle C P A Case of Hodgkin's Disease with Late Development of Sacro-Iliac Disease Cured by Roentgen Treatment *Am J R ntg nol* 924 46

The patient was a girl 16 years of age who was admitted to the hospital December 9 1920 with swelling of the glands of the right side of the neck. This swelling had been present for a year. Under treatment with local applications it disappeared but in July 1920 it reappeared and gradually increased. The glands of the left side of the neck and those of both axillæ also became enlarged. The glands were not painful and there were no subjective symptoms.

The patient was somewhat anæmic and emaciated. Physical examination revealed extensive lymphatic tumors consisting of isolated glands of uniform consistency which formed a mass about the size of a fist on the right side of the neck and smaller tumors in the axillæ. No glands were palpable in the abdomen or groins. Menstruation had not occurred for seven months. The putum was negative for tubercle bacilli. The nose throat and tonsils were normal.

Roentgen examination showed a large mediastinal tumor mass nearly as large as the patient's head. The shadow was continuous with the cardiac shadow and the two occupied about one half of the chest cavity. The outline was smooth and sharply defined. There was no evidence of pulsation. The lungs were clear and the heart shadow was normal.

The Wassermann test was negative. The blood count was 3 430 000 red cells 14 200 white cells 71

per cent polymorphonuclears 5 per cent transitionals 22 per cent lymphocytes and 2 per cent eosinophiles. The hæmoglobin was 65 per cent. A section of the cervical glands showed Hodgkin's disease.

The treatment consisted in the application of the roentgen rays over the area affected. Within a period of eighteen months five applications were made over each field.

Progressive reduction of the tumor tissue and improvement in the general health resulted. The patient's weight and strength increased and her color improved. Menstruation occurred in April 1921. Eleven months after the beginning of treatment there was no palpable evidence of the disease. The tumor tissue in the mediastinum had been reduced two thirds. Eleven months later the patient seemed well although there was still slight evidence of the disease in the upper mediastinum.

She remained apparently well for one year but at the end of that time returned because of a tumor which had appeared over the left hip posterior to the great trochanter. This growth was about the size of a small banana. Its hardness suggested bone. Ray examination showed that there was no bone disease. The tumor density was that of soft tissue. In the upper portion of the left sacro iliac joint was an area of destruction about 1 in in diameter. No palpable lymph glands were found.

On June 15 1923 a dose of roentgen rays similar to the doses given previously was administered. Examination on August 9 showed that the tumor had entirely disappeared and that the bone had become healed.

CLAYTON F ANDREWS M D



# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Werner R: The Treatment of Surgical Carcinoma and Sarcoma with Radio-Active Substances (Ueber die Behandlung chirurgischer Carcinome und Sarkome mit radioaktiven Substanzen) *Strahlentherapie* 1923 2 3

Werner discusses the methods of employing radioactive substances in the treatment of malignant tumors on the basis of his own experience and that of others reported in the literature. Extratumoral irradiation is given through the skin and the introduction of radioactive substance into the cavity while intratumoral irradiation is a method effected by means of metal needles containing calcium or mesothorium or of glass capillaries containing emanations.

In external irradiation the relationship of the dosage to the skin erythema dose is the determining factor of the pathologic reaction. In the case of the roentgen ray by taking into consideration the dosing surfaces. In intratumoral irradiation the most practical unit of dosage is the relation of the strength of the rays per centimeter of length of the radiating lead and per centimeter of the irradiated tumor tissue. In intratumoral application the best rays also are active.

The question as to whether radium therapy may cause a rapid increase in the growth of a tumor is answered by Werner in the affirmative. He has observed this on a number of occasions.

After frequently repeated radium treatment with doses which are not in themselves large enough to cause a strong reaction late injury may appear chiefly in the form of vascular changes but also in that of atrophy of connective tissue.

In the second part of the article the author discusses the technique and results of the treatment of malignant tumors in various locations. In sarcoma of the vault of the cranium a considerable number of lasting cures have been obtained by external radium treatment. Tumors of the pituitary body and retrobulbar glioma or gliosarcoma have also frequently disappeared following the external application of radium. All of tumors of the parotid gland react well when sarcoma is present. As most of them continue refractory to surgery these apparently complete disappearance does not give any assurance against recurrence. Radium therapy of particular value in malignant goiter containing circumscript tumor nodules. In diffuse goiter of the thyroid the roentgen ray treatment is indicated at any rate radiation is to be preferred to operation. In cases of tumor of the buccal cavity pharynx and larynx the results are usually not good. In bronchogenic carcinomas radium treatment has shown some very remarkable results. Recently

attempts have been made to improve the results in malignant tumors of the prostate and of the rectum by the use of radium needles.

In carcinoma of the esophagus an entirely successful cure is still not obtained even with the greatest skill and care.

For postoperative treatment the roentgen ray is usually preferable to radium on technical grounds. Treatment before operation is permissible only if medical losses (one half to two thirds the skin erythema dose) which do not disturb the course of healing are employed.

The clinical effect of radium treatment is epithelioma of the skin and carcinoma of the lip.

In conclusion the author states that in treatment with radioactive substances the emphasis is being made to suit the technique to the particular kind of tumor and the requirements of its anatomical situation and local peculiarities. But in spite of this a true cure or first improvement has been obtained thus far in only a small percentage of carcinoma and sarcoma. In the estimation of dosage it is better to give too small than too large doses. A small dose—one half to two thirds the skin erythema dose—does not cause the desired effect it is always possible to follow it by intensive treatment three or four weeks later.

WILLIAMS (2)

Hoff Elder H: Concerning the Limits of Deep X-Ray Therapy and Operation in the Treatment of Malignant Growth. *J. C. R.* 1924 6

At the clinic of Schminde in Frankfurt where the author is permitted roentgenologist an operable cancer is operated upon as soon as possible but a class of cancers is recognized in which because of the formidable mutilation the high mortality and the small chance of cure associated with surgical treatment the indication for operation is no longer unconditional. In the latter X-ray treatment can do at least much surgery and frequently more.

Steinthal's classification is used in the group of cancer in that the best can be in stages 1 and 2 should be treated surgically as far as possible. Cancer beyond Stage 2 should be given X-ray therapy. In the employment of prophylactic postoperative X-ray treatment in Stage 2 the results in the Schminde Clinic agree with those of the Anschütz Clinic but at variance with those obtained by Fethes Clinic. At Fethes Clinic the percentage of cures calculated on the basis of all cases was reduced by postoperative radiation from 42 to 26 per cent while at the Schminde and the Anschütz Clinics it was increased from 46 to 66 per cent.

In cancer of the larynx a three year cure is obtained by surgery in 80 per cent of the cases and by X ray treatment in 70 per cent. In cancer of the tongue irradiation competes successfully with surgery but the prognosis is relatively unfavorable. Cancers of the larynx seem to react favorably but because of the lack of sufficiently long periods of observation it is still impossible to give a clear indication. Cancer of the oesophagus must be considered inoperable. X ray treatment offers palliation but permanent cures have not yet been proved. Neither is it possible now to give a clear indication for X ray treatment of cancer of the stomach.

In cancer of the thyroid the results of X ray treatment are so favorable that surgery should be confined to the test excision. In cancer of the rectum X ray treatment will often render inoperable cases operable. Whenever possible cancer of the rectum should be operated upon. The Schmieden Clinic has obtained a three year cure in 27.5 per cent of the cases by means of preliminary radiation followed six weeks later by operation and by prophylactic radiation eight weeks after operation.

Only 8.3 per cent of all patients with inoperable cancers in various regions of the body were free from recurrence at the end of three years. The number temporarily benefited was large and to one half of them the capacity for work was restored for more than one year.

The chances of effecting a cure by radiation are much better in sarcomata than in carcinomata. About 50 per cent of the mediastinal tumors especially sarcoma of the Cundrad type can be completely and permanently cured. In cases of sarcoma of bone a three year cure is obtained in 43 per cent in which the tumor is not molested surgically. When biopsy is done the percentage drops to 14. In sarcoma the results of radiation surpass those of surgery.

CHARLES H. HEACOCK, M.D.

Sippel P. and Jaekel G. Causes of Failure in the Roentgen Treatment of Malignant Tumors (Ueber die Ursachen des Misserfolgs der Röntgenstrahlbehandlung maligner Neubildungen). *W. chem. med. W. h. c.* 1923, 14, 9.

The authors review the results obtained by roentgen treatment in cases of malignant neoplasms of the female genitalia and other malignant growths at Bumm's clinic in a period of eleven years. The original high hopes have not been realized, optimism has had to give place to great disillusion.

Except in cases of postoperative prophylactic irradiation the results have been very disappointing. This was due on the one hand to overestimation of the deep effects of the radiation, errors in dosage and overestimation of the roentgen sensitivity of malignant tumors. Among the physical causes of failure the most important was the difference in the output of rays from Coolidge tubes of the same system on the same day and under the same conditions. The erythema dose being reached in eighty three, eighty five, eighty nine and one hundred and twenty two

minutes. In addition the registering of the milliamperemeter was sometimes inaccurate because of deposits due to the moisture in the atmosphere and the isolating power of the glass wall. Deviations of 60 per cent from the normal were observed. These were downward when the current was strong and upward when it was weak. Errors were due also to the fact that the resistance regulator of the kilovoltmeter became heated after several hours of use so that the kilovoltmeter registered a tension too low and an overdose amounting to 50 per cent was given unless there was a safety spark gap in the tube. The spectrometer of March, Staunig and Fritz (the old model with a scale is meant) was found unsuited for practical work because the error it made in the measurement of dosage ran as high as 30 per cent.

In determining the doses for deep radiation the authors first took Dessauer's statements as their guide but later when they tested these with the ionoquantimeter of Reiniger, Gebbert and Schall they found that in Dessauer's tables the deep action was greatly overestimated. This accords with the findings at the Friedrich and Glocker Institutes. The reason for the error was that Dessauer worked with films superimposed upon each other and the films that lay underneath received too much light from the secondary radiation of the silver bromide on those that were on top. Therefore in the center of the irradiated field the dose was too small and could be brought up to the amount necessary without placing too great a strain upon the skin only by adding direct irradiation of the tumor with radium or the roentgen rays by way of the vagina. Accordingly the authors obtained better results from combined radium and roentgen treatment than from the large roentgen field alone.

The chief cause of failure, however, lay in the biological reaction of the tumor. Some tumors are very sensitive, reacting to one half or two thirds the erythema dose. Others of medium sensitivity react to one erythema dose. Others of still less sensitivity can be influenced by no less than one and one half or more of the erythema dose. Still others are wholly refractory to the rays.

The malignant lymphomata and strumata and certain forms of sarcoma belong to the first group but from 60 to 70 per cent of all malignant tumors belong to the third or fourth group and only from 10 to 20 per cent to the second group. Carcinoma of the cervix is particularly resistant. The most difficult to influence are bone giant cell and melanoma, sarcoma of the cervical or uterine mucous membrane, carcinoma of the tongue and cornifying squamous cell carcinoma of the outer skin.

The results in all cases were subjected to the most careful study by microscopic examination of tissue excised for that purpose. In sarcoma as well as in carcinoma the diagnosis can be made only with the help of the microscope. The Seitz and Wintz sign, a rapid decrease in the size of the tumor after exposure to the X ray, is not to be depended upon since myomata also frequently undergo very rapid shrink

age. The danger of recurrence and metastasis remains even when the reaction is prompt. Indeed the authors frequently received the impression that metastatic spread was favored by local disappearance of the tumor—in carcinoma of the breast for example.

When distant metastases are already present roentgen ray treatment is of no avail. Small carcinomatous cell complexes are more easily influenced by the roentgen rays than are solid tumors as is evident in the disappearance of the peritoneal diseminations of a carcinoma of the ovary with persistence of the primary tumor.

With regard to the results obtained by post-operative roentgen ray treatment the authors state that from October 1, 1910 to May 1918, 289 radical operations were performed for carcinoma of the cervix with a mortality of 13 per cent. Of the 251 surviving patients 108 received radiotherapy (usually roentgen rays combined with radium) and of the fifty-eight (37 per cent) are alive today and free from recurrence. Of the 143 who did not receive radiotherapy fifty-one (35.6 per cent) are still living. Therefore post-operative radiotherapy raised the incidence of cure to 18.1 per cent. This was true also in carcinoma of the ovary.

The patient's general condition, age, and state of nutrition are important factors in the success of roentgen ray treatment. In this connection the authors call attention to the fact that the decrease in the leucocytes after treatment markedly lowers the general resistance. Carcinoma of the cervix ac-

companied by septic hemorrhous suppuration and fever is not suitable for roentgen ray treatment.

Experiments made to test the observations of Grebe and Martius as to the greater effect of soft rays showed no difference in the permanent effect of rays of different degrees of hardness. All other attempts to stimulate the carcinomatous growth—the parenteral administration of protein, brief exposure of the entire body to the rays, stimulating irradiation of glands of internal secretion, Alpine sun treatment, blood transfusions, etc.—had no effect.

In systematic histological studies made to determine whether the sensitivity of the tumors to the roentgen ray depends to any degree upon their structural differences (degree of maturity, fat content, etc.) Meyer found no basis for such a belief.

Direct irradiation with radium influences tumors more favorably than indirect deep radiation, but unfortunately small vaginal roentgen tubes have not yet been constructed successfully. For the present therefore a combination of roentgen ray and radium treatment must be used.

Since the statistics of operation followed by prophylactic radiotherapy show 53.7 per cent of cures in 108 cases at the end of five years while of an equal number of operable cases which were treated conservatively by combined roentgen ray and radium treatment only twenty-six (24 per cent) were cured, Bumma's clinic has returned to the principle that in cases of operable carcinoma the treatment should be operation followed by prophylactic radiotherapy.

UTSA (Z)

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Meyer A W and Cajori F A An Anatomical and Chemical Report on a Unique Case of Myeloma *Arch Int Med* 1914 13: 531

The authors believe that the formation of multiple myelomata is associated with an unusual condition of mineral metabolism due to extensive lesions in the osseous tissues. They give the calcium and phosphoric acid content of the tissues in a table. Their findings and the results of balance experiments made in cases of multiple myelomata make it seem probable that the calcium liberated in the destruction of bone tissue is rapidly and in large part excreted only relatively small amounts being deposited in other parts of the body.

EMIL C ROBITSKIE M D

Bloodgood J C Xanthoma Introduction

*A J S* 1914 88

Garrett C A Tumors of the Xanthoma Type

*A J S* 1914 89

Smith D T A Method for Making a Differential Diagnosis Between Xanthomas and Melanin Tumors from Frozen Sections Based on a Study of 130 Xanthomatous Tumors and 200 Melanin Tumors *Arch S* 1914 905

Bloodgood by way of introduction to the following articles on xanthomatous tumors reviews the entire group of tumors of the soft parts benign and malignant considering epidermal subepidermal and subcutaneous group tendon sheath tumors and tumors of bursae. The epidermal subepidermal and subcutaneous nodules are almost always benign at the onset and frequently remain benign for many years. By proper treatment it is nearly always possible to cure them completely. Death in such cases is due to delay of intervention or inadequate excision. All such tumors if removed at all should be completely excised with a good margin of skin and subcutaneous tissue. Failure to do this carries a definite danger and is responsible for most failures of treatment. If proper excision is impossible without extensive mutilation and a definite danger of malignant cancer is established even with identification no operative intervention whatever should be attempted. Tendon sheath tumors particularly those occurring below the wrist on knuckles and tumors of bursae are usually benign and rarely necessitate amputation.

Garrett studied 106 cases of tumors not all xanthomata but all so closely related that they belong to a common group differing from other types of benign tumors and from sarcomata. They included fibrohemangiomas granulation tissue

tumors and tumors of tendon sheaths joints and bursae. Of seventy six fibrohemangiomas nineteen were microscopically typical of xanthoma though grossly and clinically they did not differ from the others. They were made up of fibrous tissue with masses of foam cells large foreign body giant cells proliferating endothelial cells and blood pigment. The foam cells are uniformly vacuolated cells which are supposed to be characteristic of xanthomata. They are found however in 50 per cent or fewer of the cases and appear also in a number of other conditions. Fibromata of the tendon sheaths present a typical picture and are strikingly similar microscopically but grossly 40 per cent of them appear xanthomatous. The granulation tissue tumors were a confusing heterogeneous group. One was called a xanthoma. All were benign and were cured by local excision. Of the bursal tumors none was xanthomatous but xanthoma occurred in four of eleven cases of joint tumors. All of the cases in this series were cured by local excision. Fifteen per cent of the tendon sheath tumors recurred but the patients remained well after a second operation.

Smith calls attention to the following differences between true melanin and the blood pigments found in xanthomatous tumors.

Melanin pigment is endogenous in origin. The granules are individual discrete bodies of uniform size shape and color regularly distributed throughout the cytoplasm and smaller than the granules of blood pigment. They do not give the iron reaction. The granules of xanthomata are hematogenous in origin give the iron reaction and incite a foreign body reaction within the tissue. The granules become clumped together into irregular masses of different sizes and vacuoles form about each mass.

L M ZIMMERMAN M D

Meyer W Some Notes on Cancer with Special Reference to the Parasitic Theory *J C* 1914 14

It seems to be universally accepted that the cancer cell was at one time a normal cell of the tissue from which the cancer arises. Between the condition of normal tissue cell and that of true cancer there is a pre-cancer state.

Cancer is today produced at will. The method employed involves the use of (1) chemicals (2) the X-ray (3) mechanical factors and (4) parasites. If coal tar is brushed for months over the ears of rabbits or the backs of mice benign growths appear. If the irritation is continued malignancy eventually develops. It has long been known that the X-ray may cause cancer. As the proper dosage has been discovered the X-ray may now be controlled so that cancer may be produced or prevented at will.

Rats have been caused to develop cancer by feeding them oats and barley the bristles of which penetrate their tongues. The largest number of artificial tumors were produced by Bullock and Curtis who fed rats with cat excrement containing ova of *Cysticercus fasciolaris*. More than 1000 sarcomata of the liver have been thus produced.

The theory that cancer is due to a parasitic or specific cause has been discredited by the laboratory production of cancer by various other means. No specific infecting agent is known which is so indifferent to the character of its host that it is capable of infecting all vertebrates in all climates.

Investigation of cancer boats on the shores of the Baltic and in Siberia revealed that the fishermen ate raw fish infested with the larvae of trematodes helminths which have a predilection for the gall bladder. In many of these fishermen who died of cancer thousands of these worms with their larvae were found in the liver and bile ducts where they had produced inflammation preceded by cirrhosis of the liver. Moran the pioneer investigator found that when bedbugs were transferred from the cages of cancerous mice to those of healthy mice a large number of the latter developed cancer. Rodents of all kinds are infested with helminths cestodes and nematodes. Bedbugs feed and live upon these animals and absorb with the blood the larvae of helminths. Later the insect through its suction tube infests a new victim with the previously absorbed larvae.

The theory that parasites of various kinds may be causes of cancer was strengthened by a study of the high incidence of cancer in Berlin. The sewage of that city is disposed of by a system of pipes which carry it to deep caissons whence it is pumped to distant tanks and used in the irrigation of extensive truck farms. Proved high cancer incidence and proved consumption of lettuce radishes onions celery eaten raw and coming from fields fertilized with human excrement are there associated.

From investigations of other cancer districts the conclusion was drawn that the cancer house cancer street cancer boat and cancer region are myths as far as the contagiousness of cancer is concerned but in these districts and houses and boats certain parasites may abound which gain entrance to the human body and produce prolonged and continued irritation leading to cancer.

Laborers employed in certain steps of the manufacture of anilin are apt to acquire catarrh of the bladder. If they are taken off this work upon the onset of the condition the symptoms recede but if they continue at that work a chronic catarrh of the bladder develops and a certain percentage develop malignancy. If the cause seems apparent that chronic inflammation from any source is sufficient to produce malignancy.

Toward the end of the last century many investigators concluded that the cancer cell itself is an immigrant parasite. This contention was based on the following observations:

1. Cancer cells form no tissue but ordinarily lie disconnectedly and loosely side by side in the stroma and without physical connection with the stroma.

2. Cancer cells perform no function in the system but live upon it. When they appear to function such functioning lasts only a short time.

3. Cancer cells can be disseminated throughout the system like bacteria and act like parasites in that they form metastases which are like the primary growth.

4. Cancer cells like bacteria are capable of producing thrombi in veins.

This theory has been so shaken that after a half a century of searching in many directions science has returned to the starting point. Virchow's theory that irritation is the cause of cancer remains dominant.

The article is summarized as follows:

1. It is generally agreed by competent investigators that spontaneous cancer cells descend from normal cells of the tissue in which the cancer arises.

2. To the process of transformation of the cells from one state to the other parasites like numerous other non-specific factors—mechanical thermal actinic chemical endocrine hereditary—stand in the relation of the match to the heat radiating from the fire which it has kindled viz inciting but incidental.

3. Current experimental production of primary cancer by various non-specific means makes the search for the specific cancer agent appear no longer advisable and seems to prove that ordinarily irritation is the starting point of developments leading in the direction of cancer.

4. As nearly as anything can be certain in medicine there is no cancer contagion i.e. specific infection.

5. Observations seem to prove that cancer is in every instance an individual experience.

6. More than one individual may receive a non-specific inciting factor from the same source and then independently may or may not develop cancer.

7. Around source disseminating directly or indirectly through intermediate hosts one or more non-specific inciting factors cancer foci in cancer towns cancer districts may become established.

8. In order to reduce the incidence of cancer such common sources must be sought out and abated. One such source seems to be the rat.

9. Systematic rat extermination already suggested for economic and hygienic reasons appears also from the point of view of reducing the number of cancer inciting factors.

10. Prophylactic antihelminthic treatment at frequent regular intervals throughout life applied as broadly as vaccination against smallpox might possibly cause a reduction in cancer incidence. Such procedure would of course be of still greater value if in addition means could be found to reach and render harmless the larvae in the various organs.

PAUL W. STREET, M.D.

## MEDICAL JURISPRUDENCE

Failure to Relieve a Strangulated Hernia *Mo II*  
*21 Lal nd 120 Al p 435*

These were two actions for negligence and malpractice one of which was brought by Mary L. Morrell and the other by her husband against Dr Lalonde a physician and surgeon. The cases were tried together and the trial resulted in a verdict for \$13,416 for the wife and for \$2,333 for the husband.

The trial judge indicated that unless the parties would cut down the awards to \$3,500 and \$1,500 respectively he would grant a new trial. On this ruling they appealed to the Supreme Court of Rhode Island.

Mrs. Morrell at the time of the acts complained of was 59 years old. Dr. Lalonde conducted a private hospital. For more than three years prior to April 1920 Mrs. Morrell had been suffering from a hernia. Ultimately the hernia became strangulated. Dr. Lalonde had advised her that an operation was necessary and that delay was dangerous but she failed to take any action until in April her condition became so critical that she was convinced that an operation offered the only chance of saving her life. On the following day she went to the hospital. The

court said: He made an unskillful opening into the abdomen and without attempting to do anything to relieve the obstructed bowel after removing an accumulation of pus sewed up the wound told the patient she was going to die and that he could do nothing more to help her. That evening Mrs. Morrell was removed to her home by her husband. With regard to whether the doctor remonstrated against her removal there is conflict in the evidence. On the third day after the operation and without medical attendance from her physician in the meantime he was removed to another hospital where a second operation was successfully performed.

The court further said: Although the patient had but a small chance of escaping death the defendant by failing to relieve the acute condition of strangulation and by making a useless and unnecessary incision into the abdomen thereby diminished the chance of his patient's surviving. For this failure and his subsequent neglect the defendant is responsible to the plaintiff for such damages as he proves she has suffered as a consequence thereof.

Thereupon the court ordered that the action of the trial court in cutting the award to the amounts stated be approved. WILLIAM E. MOONEY

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## SURGERY OF THE NERVOUS SYSTEM

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## SURGERY OF THE CHEST

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## SURGERY OF THE ABDOMEN

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# International Abstract of Surgery

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## EDITOR'S COMMENT

**A**BDOMINAL surgery comprises so large a part of the work of the general surgeon that the principles of the surgical treatment of abdominal disease and the various methods evolved in different world centers for putting these principles into effect are of very real importance to nearly every man interested in the practice of surgery.

The current issue of the *INTERNATIONAL ABSTRACT OF SURGERY* contains an exceptionally large number of interesting and important contributions to the subject of abdominal surgery. Two papers on gall bladder surgery—one by Koerte (p. 393) and a second by Kirschner (p. 393) reflect the controversy concerning the indications for operation in the presence of gall bladder disease that has been carried on for some years in Germany. The former represents the older and more conservative school which for many years has determined the attitude of German medical men toward gall stone disease. The latter represents the younger school which favors surgical treatment early in the course of the disease in order to prevent the effects of long continued even though low grade infection. Three papers dealing with various phases of gastric surgery are worthy of particular attention—a discussion on the treatment of severe gastric and duodenal hemorrhage presented by Paterson Willcox Burges and others before the Royal Society of Medicine of London (p. 381), Schoenbauer and Orators study of the late results of carcinoma of the stomach based on 432 cases observed at the Vienna clinic (p. 382) and Stein and Friedl's investigation of gastric and pancreatic function after extensive resection of the stomach (p. 383).

Niles' paper on congenital fixation of the duodenum (p. 385), Lee and Downs' discussion of the treatment of intestinal obstruction by jejunostomy (p. 387) and Lehmann and Gibson's interesting observations on a case of jejunal fistula (p. 387) emphasize again the intimate relation between physiology and surgery—the importance of an adequate conception of normal

function for the successful application of surgical treatment.

Gordon Watson's paper on diverticulitis of the pelvic colon (p. 389), Mills' presentation of the x-ray evidence of secondary changes in the colon (p. 388), Soper's discussion of restoration of colonic function (p. 388) and Kroll's report of the results of operation for carcinoma of the rectum during ten years at the Surgical Clinic of the University of Königsberg comprise a group of equally interesting and important papers on the surgery of the large intestine. An original and ingenious method of repairing a large abdominal hernia by swinging the tensor fascia femoris with its nerve and blood supply intact over the abdominal defect is described by Mackenzie (p. 379).

**T**HE use of vaccines and sera in gynecological and obstetrical practice—a procedure advocated particularly in certain French clinics—is discussed in two papers—one by Chevrier, Fumery and Dausse on the results of autovaccine therapy in utero-adnexal affections (p. 399) and a second on the serum treatment of puerperal sepsis by Bailey of New York (p. 406).

A number of other interesting and important abstracts should be briefly mentioned. A symposium by Simonds, Grinker, Patrick and others on inflammations of the brain and meninges of otorhinological origin (p. 372), a discussion on vertigo by Rolleston, Holmes, Scott and others (p. 375) and a description by Pussep of the operative treatment of tumors in the region of the sella turcica (p. 373) will interest particularly the neurological and aural surgeon. Smith's discussion of the causes and treatment of otitis media is a helpful contribution on an important subject. Bumpus' report of the results of radium treatment in prostatic hypertrophy (p. 412), Hackenbrock's study of a case of operative neo-arthritis after two years (p. 419) and Matas' description of the postoperative treatment of critical cases with the aid of the intravenous drip (p. 424) will interest every surgeon whose mind is open and receptive to new and helpful ideas.

# INTERNATIONAL ABSTRACT OF SURGERY

NOVEMBER 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Sehlaeu P. Autoplastic Closure of a Large Inter-  
maxillary Hyoid Defect by Means of a Double  
Flap with Two Pedicles (F rmeture par auto-  
plast à d ouble l mbe u bipédu lé d large  
b è he de l region i t maxil hyo dienne)  
B l et mêm Soc n i de ch 9 4 1 56

In the case reported the entire lower jaw had been destroyed by necrosis and there was an enormous defect extending from one mandibular angle to the other. The defect was closed by means of two superimposed flaps each having two pedicles. A cervical flap with a pedicle under each ear was turned with its skin surface toward the buccal cavity its edges being sutured to the mucosa of the defect. A scalp flap with bilateral temporal pedicles was then passed over the forehead no mouth and chin applied over the first flap with its skin surface outward and sutured to the skin of the breech.

This technique was first used by Dufourmental. The grafts have taken well and the defect has been filled except for a small area where necrosis resulted from erysipelas. Sehlaeu is correcting the remaining defect by further autoplastic procedures.

W A BREMAN

### EYE

Harrison W J. The Intranasal Operation for  
Disease of the Lacrymal Apparatus B I  
M J 924 1 1 47

Harrison has done the West operation in sixteen cases and in four performed it on both sides. He has traced the results in fifteen cases. Twelve of the patients say they are completely cured one states that he has had no abscesses and another reports slight epiphora and a second operation.

The article is concluded with the following statement: This operation offers considerable advantages over excision of the sac but the question whether it is safe subsequently to perform an opera-

tion for cataract or one involving the opening of the eye is open to doubt as some infection of the sac persists after the operation in some cases.

THOMAS D ALLEN, M.D.

Rochat G F and Steyn J S. The Influence of  
Calcium Chloride on the Production of Ocular  
Fluid and on Ocular Pressure B I J Ophth  
19 4 VI 257

By means of a Leber filtration manometer Rochat and Steyn measured the liquid current taking place when the eye is connected with a manometer in which there is a slight underpressure. They then ascertained whether the current changed under the influence of calcium chloride. The amount of liquid that was displaced per minute from the eyes of rabbits under narcosis was carefully noted for ten minutes with the pressure in the manometer from 5 to 10 mm Hg below the intra ocular pressure at the beginning of the experiment. If it remained constant for the ten minute interval as did the blood pressure 6 cm of a 5 per cent solution of anhydrous calcium chloride were injected into the iliac vein the displacement of the air bubble and the oscillations of the blood pressure being then noted carefully and continuously.

It was found that during an average of twenty minutes after the injection of calcium chloride the production of ocular fluid was considerably increased and that this period of increased production was followed by a distinct decrease of much longer duration. The decrease could be noted during one and one half to two hours beyond which time it was not found practical to continue the experiment. The initial increase and subsequent decrease took place independently of the blood pressure.

Further investigations were made with Rochat's sensitive registration manometer to determine whether after the injection of calcium there would be any change of pressure in the intact eye. The results corresponded to those of the previous experiments.

Still other experiments were made to determine the influence of the injection of calcium on the secretion of fluorescein in the anterior chamber. It was found that the calcium accelerated the appearance of the green color in the intra-ocular fluid.

These experiments show that it is possible to inhibit the production of fluid in the eye by the administration of calcium chloride. In clinical cases calcium chloride can be given only by means of subcutaneous injections cause extensive necrosis of the skin and intravenous injections of any considerable quantity are dangerous on account of their action on the heart.

Rockat and Steyn mention the importance of distinguishing between two clearly different actions of calcium chloride on the production of ocular fluid: the one inhibiting and the other promoting its production.

The inhibition of ocular fluid is readily explained by the fact that calcium renders the walls of the blood vessels less permeable and contracts the small blood vessels.

The promotion of fluid formation may be explained by the effect of calcium on the nervous system of the eye which may be either a paralysis of the constrictors or a stimulation of the dilators causing increased ocular circulation.

ALFRED H. LAMBER, M.D.

Woods A. C. The Application of Immunology to Ophthalmology. *Arch Ophthalmol* 9:413.

Woods discusses in a general way his ideas concerning the various diseases of the eye which may be explained on the basis of anaphylaxis or allergy. He takes up four structures of the eye: the conjunctiva, the cornea, the lens and the uvea.

Inflammations of the conjunctiva which seem to belong to this category are: (1) those occurring in hay fever; (2) those associated with pollen hypersensitivity; (3) those due to food anaphylaxis and (4) phlyctenular disease. Wood quotes various investigators who have done considerable work on each of the subjects and gives his own theory of the anaphylactic relation between tuberculosis and phlyctenular disease.

With regard to the cornea, he says in order to agree with those who claim that interstitial keratitis is of allergic origin is frequently allergic.

A considerable amount of work has been done on the lens by European and American investigators but many of the reports are inconclusive and the serological explanation of the results is often very complicated.

In Wood's opinion, uveitis is of allergic origin for example, a sympathetic ophthalmia and rheumatic uveitis—may often be explained on the basis of anaphylaxis.

The methods of arriving at a diagnosis with the use of pollen, tuberculin, and uveoprotein are described in detail.

THOMAS D. ALLEN, M.D.

Sutherland J. M.: Retrobulbar and Intra Ocular Neuritis Due to Hyperplastic Changes in the Ethmoid Sphenoidal Sinuses. *J. M. A. J. 1914* 22:29.

Sutherland calls attention to the relation of the posterior ethmoid cells and sphenoidal sinus to the optic nerve: the intimate relationship of the blood vessels supplying the sinuses and the orbit; the blood supply of the optic nerve and the size of the optic foramen and canal. Etiological factors of retrobulbar and intra-ocular neuritis are infection through the blood and lymph streams; direct extension of inflammation or infection and pressure upon the intracanalicular portion of the optic nerve from thickening of the bone due to periosteitis, osteitis or edema of the soft tissues.

The author has proved to his own satisfaction that any chronic irritation of the posterior ethmoid cell or sphenoidal sinus with or without suppuration and bony changes is sufficient to cause inflammation of the optic nerve. He advocates for all cases of optic neuritis and especially unilateral cases opening and drainage of the ethmoid-sphenoidal sinuses even though the rhinoscopic examination may be negative.

ALFRED H. LAMBER, M.D.

Withers S. The Value of Radiation Therapy in Ophthalmology. *Am. J. Ophthalmol.* 1914 3:54.

Withers states that one of the permanent contributions of radiation therapy is the demonstration of certain biological properties of tissues: that some tissues are resistant to large doses of radiation while others are more or less susceptible. Five structural characters which determine susceptibility to radiation are: (1) undifferentiated forms of cells; (2) rapid growth; (3) abundance of mitoses; (4) large hyperchromatic nuclei; (5) anascularity especially that due to an abundance of the so-called capillary stroma and (6) absence of stroma or intercellular substance.

Thus, we prove relatively unacceptability of the cells are differentiated of adult structure and contain a small amount of chromatin in the nuclei when they grow slowly and show few mitoses when the blood supply is obtained from well formed adult vessels and (7) absence of stroma or intercellular substance.

With these criteria in mind it is possible to state a theoretical ground whether or not certain pathological processes seen by the ophthalmologist are suitable for radium treatment.

Conditions in which treatment by radiation is the method of choice are: basal-cell carcinoma, epithelioma of the cornea, undifferentiated squamous epithelioma and lymphoid deposit including chloroma and Hodgkin's disease, angiomata andermal neoplasms. Epithelioma of the cornea is treated with relatively unfiltered radium in cauterizing doses at one sitting. The cornea is lifted in ten to fifteen times as far as it stands as the epithelium of the lids.

Conditions in which the use of radium is of proved value but not necessarily the method of choice are adenoid cystic carcinoma arising in the skin and lachrymal tract prickly cell carcinoma carcinoma and orbital melanoma of differentiated cell structure including fibrosarcoma and adenocarcinoma but not including chondromata or osteomata actinomycosis blastomycosis lupus vulgaris and lupus erythematosus. The treatment of relatively differentiated sarcoma with radium usually brings discredit to the method unless it is used in conjunction with surgical removal or destruction. In actinomycosis and blastomycosis radiation therapy should be employed as an adjunct to the usual medical treatment. In lupus vulgaris and lupus erythematosus radiation is the method of choice in all but the acute fulminating conditions.

Conditions in which radium may be employed and more traumatizing procedures are contraindicated are cataract pterygium nevus papilloma xanthelasma cicatrices and keloids and trachoma and its complications. In incipient cataracts the lenticular opacifications may diminish. If the cataract matures subsequent to radium treatment no technical difficulties are encountered in operating. The author uses the technique for deep radium therapy, the application lasts two hours and 5 mgm of element are used. Pterygium is caused to disappear by cauterizing doses of radiation therapy.

Conditions in which experimental applications of radium are justified because favorable results have been obtained from them in pathologically similar conditions elsewhere or because of definite evidence of radiosensitiveness of the particular cells involved are phlyctenular keratitis and conjunctivitis and keratoconus. In keratoconus cauterizing doses at the apex of the cone are suggested. The scars resulting from radium applications are less dense than those from escharotics or cauterizations.

Pre-operative and post-operative applications of radium may be given in operable malignancy and palliative applications in hopeless malignancy.

LYMAN A COOPER, M.D.

LISTER S. W. S. McCusker, in *Clinical Surgery*, 4: 13.

Lister discusses ruptures of the sclera, concussion of the iris and ciliary body, the retina, and the optic nerve evulsion of the optic nerve, and the effects of foreign bodies striking the retina. The chief difference between the injuries of the sclera and those of military practice is that the former are usually produced by more slowly moving objects.

In civil life the greater number of scleral ruptures are concentric with the cornea and about 3 mm from the limbus. In military practice these as well as very different ruptures are seen. The cornea may be burst forward by a large foreign body passing through the back of the eye, or the entire sclera may be split into lobes by the entrance of a fragment from the front. When the sclera is not perforated

the rupture does not start from the point of contact but occurs at some distance from it, most commonly in the equatorial zone about the line of impact or immediately opposite the point of impact (the point of contrecoup) and these two sites of rupture are associated with two different kind of blow. The ruptures caused by slowly moving objects occur in the equator at a point where the globe is least supported. In contrast to this ruptures caused by rapidly moving objects occur at the site opposite the point of impact. The latter are most frequently seen in military practice.

Changes of the iris and ciliary body are commonly indolent and peripheral in location of the iris or apparent iridectomies. The latter are accounted for by retroflexion of the iris and its incarceration between the ciliary body and the lens or by a rent in the ciliary body.

Characteristic concussion changes are caused by rapidly moving missiles which pass through the orbit without rupturing the sclera. In cases seen soon after the injury great blood red cloud of hemorrhage are found in the retina interspersed with glistening white areas if the vitreous is not clouded by hemorrhage. After several weeks the glistening

white areas have disappeared, are undergoing absorption or have been replaced by fibrous tissue plaques in the substance of the retina or in the vitreous. These changes occur in three situations: viz. adjacent to the site of impact in the macular region and in a few cases opposite the site of impact. Hemorrhages in and about the retina are of every variety. The four main changes found in the retina are shrinking and disappearance of the nuclei of the granular layers, vacuolation of its substance, splitting of the retina into layers, and folding of the retina.

Evulsion of the optic nerve follows blows on the front of the eye penetrating wounds of the ball itself and penetrating wound of the orbit at the side or the back of the globe. The mechanism of evulsion varies with the nature of the injury to the nerve: either pushed or pulled out.

The rupture takes place in front of the lamina cribrosa at the junction of the nerve with the retina because here the nerve tissue consists almost entirely of naked axis cylinders whereas behind the lamina it has strong supporting fibrous lamellae continuous with the lamina.

When a foreign body strikes the retina it may remain embedded in the retina, in which case it often causes puckering; it may perforate the coats of the eye and pass into the orbit or it may rebound and come to rest far from its original track. At the site of the impact the retina is bruised or cut. Not only are the rods and cones injured but nerve fibers passing to more peripheral parts of the retina are divided. This results in a distribution defect in the visual field which is fan shaped from the point corresponding to the lesion extending toward the periphery of the median raphe.

LYMAN A COOPER, M.D.

Wilder W H A Melanotic Epibulbar Tumor  
Disseminated by the Use of Radium *A & Ophth*  
19 4 Jan 355

Wilder reports a case in which a slowly growing tumor probably originating in a nevus was treated for a total of 173 mc hrs by radium emanation over a period of two years. During the first part of the treatment the tumor appeared to show a definite recession but after the treatment was stopped it began to grow again. Later when the doses were increased in size and decreased in number it again seemed to be arrested and somewhat dispelled but four months after the last dose from the radium emanation tubes it again increased in size. In another institute the patient was then treated more directly with a radium plaque nine times in six months. As a result the growth was entirely dissipated and the pigment which had spread over 1 to the fornices became so thin and scattered that at a distance of 5 ft it could not be seen. Today nearly two years after the last treatment the patient is perfectly well.

No section was made and no operation performed.

De Schweinitz believed the growth was a pigmented epithelioma but Fuchs considered it a melanotic sarcoma. THOMAS D ALLEN MD

Meding C B Some Conclusions as to Cataract Extraction *C & M J* 19 4 77

Meding draws the following conclusions regarding cataract extraction:

1. The method used has little relation to the end results because of (1) the wide range in the skill and fitness of operators (2) the great variation in the physical, mental and racial characteristics of patients and (3) the relation of the method of operation to the experience of the operator.

2. Unless the cause of a condition is known it cannot be known whether relief will be given by any given method of treatment such as prolapse of the iris by iridectomy, intracapsular or extracapsular lens extraction, routine preparation to prevent infection or routine postoperative management.

The treatment must be adapted to the requirements of the particular case.

The choice of operation is an intracapsular extraction in which the ligament is ruptured from within by means of his modified forceps with small balls on the tips. These forceps are introduced closed in the same manner as the original forceps. The position of the balls can be determined from the bulge of the iris. With the forceps grasping the globe, definite pressure is made to bring the ligament forward and the forceps are then opened and closed to rub the lens from about 4 to 8 o'clock. If the lens is dislocated the operation is finished by the Smith method but if the lens is not dislocated the forceps are used again. To advantages of this procedure are that it will do no harm if it fails and the iridectomy follows the dislocation. L L McCoy MD

Wiener M Posterior Sclerotomy with a Permanent Drain for Retinal Detachment *A & Ophth* 19 4 1 368

Wiener reports seven cases of detachment of the retina. In four operations did not result in permanent benefit or it made the condition worse. In two there was marked improvement in vision after operation, complete reattachment taking place. In one case the time since the operation has been too short to warrant conclusions as to the outcome.

The author makes a double trephination of the sclera in the area of detachment 1 or 2 mm apart and introduces a small bit of horsehair through the openings. THOMAS D ALLEN MD

## EAR

MacKenzie G W The Appearance and Behavior of the Normal Tympanic Membrane *Laryng*  
19 4 22 407

The author states that the average textbook does not inform the student sufficiently concerning the anatomy of the normal tympanic membrane and that unless the otologist is familiar with the anatomy he is handicapped from the start. In a review of the anatomy of the normal tympanic membrane he calls attention to observations of his own which differ from the accepted description commonly found in textbooks. Of the recent works on the anatomy of the tympanic membrane MacKenzie regards that of Schwalbe as the best. JAMES C BRADWELL MD

Watson Williams E Labyrinthitis *B & M J*  
19 4 924 24 35

The author states that because of the danger of meningitic infection an operation on the labyrinth is indicated imperatively when acute labyrinthitis supervenes on a chronic otitis media or on a chronic circumscribed labyrinthitis. It is indicated also in cases of dead labyrinth.

When labyrinthine symptoms occur in the course of acute otitis it is contra-indicated and in no event should it be performed if the labyrinth is still functioning unless when the condition is circumscribed a disabling vertigo renders the added risk justifiable. OTTO M R R MD

Smith D T The Causes and Treatment of Otitis Media. I Observations on 205 Cases of Curving In of the Eardrum. Hospital Administration *Am J*  
19 4 4 94

Of 613 patients admitted to the hospital 33.4 per cent had otitis media when they came in or developed it while they were in the hospital.

The race and sex of the patient seemed to have no relation to the incidence of the disease.

A definite seasonal variation was noted. In February the incidence was 47.3 per cent and in July only 3 per cent.

The most susceptible period was between the ages of 3 and 15 months. Of the children in this group more than 50 per cent had otitis media.

Fifty per cent or more of the patients with pneumonia dysentery nasal diphtheria pertussis and pyelitis developed otitis media. In those with prematurity nephritis and the non infectious diseases the incidence of ear infections was less than 21 per cent.

Hemolytic streptococci were isolated from the aural discharge in 56 per cent of the fifty cases in which cultures were made.

The average duration of the disease in 100 cases was twenty five and one half days.

In commenting on the marked susceptibility of the babies between 3 and 15 months of age the author suggests that vitamin deficiency may play a rôle in lowering the resistance as practically all of the children in the series studied were on artificial feedings and most of them had received little if any cod liver oil before their admission to the hospital.

Smith noted also that 60 per cent of the thirty patients with rickets had otitis media and that the age period at which susceptibility is greatest corresponds rather closely to that of rickets and scurvy.

From eighty eight cases treated with synthetic drugs and dyes the following conclusions are drawn:

1. Practically all of the Gram negative bacteria found in the ears in otitis media except pyococcus bacilli are killed by a 0.5 per cent solution of sodium hydroxyl mercuri benzo phenone sulphate.

2. Pyococcus bacilli are readily eliminated by treatment with 2 per cent acetic acid or preferably with 0.5 per cent of the sodium solution which contains 2 per cent acetic acid.

3. All of the Gram positive bacilli found in otitis media except streptococci are readily killed by gentian violet.

4. In otitis media with streptococci neutral strychnine is more potent but even this drug is not entirely satisfactory.

Twenty cases of chronic otitis media were cured by local chemotherapy in an average of seven days each and sixty cases of acute otitis media were cured in an average of thirteen days each.

Mastoiditis did not occur in any of the eighty eight consecutive cases treated by local chemotherapy but in 4 per cent of the controls a mastoid operation was necessary. Otto M. Rorr, M.D.

## NOSE AND SINUSES

Vanden Wildenberg. The Surgical Treatment of Ozena (Leptotrichia rhinitis) (L. & S. 1914, 94, 35).

Surgical treatment is today replacing the inefficient medical treatment of so-called atrophic rhinitis. But Ballo, Weck, Jacobson and Moulouquet have reported cases benefited in from eight to eighteen months by the use of autogenous vaccines. Autogenous vaccines have proved better than mixed stock vaccines. Large quantities of diphtheria antitoxin have also been used recently because of the presence of the Loeffler bacillus in ozena and apparently have been beneficial.

Following a review of the numerous reported plastic surgical procedures to decrease the size of the nasal passage in ozena by mobilization of the nasal walls the author describes a new procedure which he devised in collaboration with Huguier. Except in the cases of unmanageable children this is performed under local anesthesia preceded by a hypodermic injection of morphine. The sinusofacial wall canine fossa pyriform incision and inferior part of the septum are infiltrated with 1 per cent novocaine with adrenalin. A transmeatal injection of 3 c. cm. of 10 per cent cocaine is given into the maxillary sinus and an injection is made into the superior maxillary nerve.

Along an incision from in front of the middle turbinate across the nasal floor and up 1 cm. on the septum the mucoperiosteum is stripped up to the level of the inferior meatus and the facial wall to expose the pyriform crest whose projecting edge guides the vertical section of the maxillary sinus wall. The turbinate and septum are freshened to promote the formation of adhesions. The nasal wall of the maxillary sinus is sectioned anteriorly in line with the mucoperiosteal incision and anteroposteriorly at the level of the nasal floor as far as the posterior sinus wall. The nasal antrum wall is lifted over against the septum. If the maxillary sinus is diseased it is curetted (one case in eight).

The displaced bone is held with a pack. In cases of external enlargement of the nasal fossa the middle turbinate is freshened and luxated to the septum. Packs are left in place until the mobilized antrum wall has become consolidated. If turbino-septal adhesions interfere markedly with respiration because of temporary swelling of the mucosa operation on the opposite nares is delayed for several months. The adhesions are essential to hold the displaced external wall.

In thirty eight cases the author had two complications—a phlegmon of the lower lip that healed rapidly and a slight epiphora. One patient recovered his sense of smell and taste. In sixteen cases operated upon from nine months to one year ago all signs of ozena have disappeared. In three the condition was improved. In four the operation failed completely and in five the mobilization was insufficient. Most of the patients had tried medical treatment. Those who were benefited now require irrigations much less frequently. Some of the cases were operated upon again after a year or longer. The operative difficulties in children are compensated for by a more rapid and lasting recovery.

The endonasal route is preferable to the transmaxillary route more readily accepted by the patient more simple and less mutilating. It renders bone grafting unnecessary and improves the condition of the mucous membrane.

Vanden Wildenberg advises a trial of vaccine therapy in all cases of mild or moderate ozena. When it fails and when the condition is severe surgical treatment is indicated. In patients cured



by vaccines the mucosa of the nasopharynx is thin and smooth and there is pharyngeal dryness. Following surgical treatment it is thick, succulent and apparently hypertrophied. At the present time surgical treatment gives the best results in most cases; complete failures are rare.

WALTER C. BREYER M.D.

Rocher and Anglade. Filtr glomata of the Nasal  
Region (les fibr gl mes de l region nas le)  
Rev d ch Par 1924 xii 47

Fibromatoma of the nasal region are solitary benign congenital tumors of slow growth. They cause deformity of the nose and obstruct breathing. Depending on their location they may be divided into three groups: the extranasal, the intranasal and those that are both extranasal and intranasal.

The extranasal fibroglia are situated in the root of the nose extending on its lateral aspect and sometimes invade the orbit of the eye and pass to the other side. They range in size from that of an olive to that of a chestnut and are rounded and smooth. A pedicle may connect them with the brain. The skin over them is free or adherent and a capillary formation gives it a reddish hue.

Intranasal fibr. gliomata are concealed in the nose or protrude through the nostril and are attached by pedicles.

Fibrogliomata which are both intranasal and extranasal and a branch from the external aspect of the nose into the nasal fossa

Three anatomic elements are constantly seen in the structure of the neoplasms: fibrous tissue, blood vessels and neuroglia. The two first are similar to those found in the meninges. The neuroglia, the predominant element, is totally different from that of a normal brain but identical with the neuroglia found in the pathological processes associated with disease of the spinal cord, with that occurring around abscesses, and with that found in the focus of a cerebral hemorrhage.

The removal of the e tumors is indicated for cosmetic reason to prevent obstruction to respiration and to prevent malignant degeneration.

It is very important to be in a position to take the necessary steps to prevent the spread of the disease. The following are some of the most common ways in which the disease is spread:

**LEE RFE M & M D**

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Roentgen therapy Dental Complication  
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mix d l'et s'encu des l'oues a les  
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as

The patient, a man aged 45 yrs, had been cured of a neoplasm of the larynx by radiotherapy three

years previous. He consulted the author because of a vegetative easily bleeding polypoid growth causing obstruction of the right side of the nose. There was no glandular enlargement. The mass had been unsuccessfully treated by cauterization and twice by excisions. It covered all of the alveolar nares encroached onto the posterior nasopharynx and involved the left maxillary sinus. The histological diagnosis was spindle-cell epithelioma. After exposure to the roentgen rays for five and one-half hours in five treatments the growth entirely disappeared from the nares and sinus. All unpleasant numerous scabs disappeared under antiseptic douching irrigations.

Eight months after the treatment an acute abscess formed in the posterior part of the upper jaw on the right side. Incision revealed a perforation of the antrum at the second upper right molar. The destruction of bone sufficient to admit the little finger. After extraction of the molar a sequestrum developed just behind the first one. This abscess also was incised and drained. The tumor has not recurred.

The case is of interest because of the marked radiosensitivity of the tumors of the larynx and nose and the destruction of the molar tooth with subsequent suppuration, osteitis and abscess fistula resulting from the X-ray treatment.

W L D C BLAKE MD

## MOUTH

Corachan N. D. moid C. ts of the Floor of th  
Mouth (Qu tes d rm les 11 lo d l hora)  
Cl 71 b 924 43

De moid cysts in the floor of the mouth are rare. Embryologically such cysts arise from ectodermal invaginations in the ectoderm corresponding to the upper branch of clefts.

The tumor has operated upon three cysts of the type. In two cases it was possible to remove the cyst through the mouth but in the third case because of the size of the tumor mass at the upper incisor extraction the gunner the chin was necessary. In the latter method hemostasis is very difficult and a high figure scars left after the operation. Therefore the abdominal approach is recommended even when the tumor is too large to allow its removal through the mouth. When the oral approach is used a transverse incision is made beneath the tongue and complete enucleation is effected by blunt dissection.

In two of the airtight vaults there were no other  
hiding places. In the vault with the car was a  
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## NECK

Baccarini L. Congenital Cysts and Fistulae of the Neck (Contributions to the History of the Neck) 1924  
 fistulae congenital 12 13 4 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Baccarini has operated upon eleven congenital fistulae of the neck due to cysts. Seven of the patients were females. In three the symptoms dated from the time of birth, in five they were noted before the fifth year and in three they had been present for less than ten years.

Four of the fistulae were lateral and seven were situated in the median line. Two of the three lateral fistulae cannot be considered as derived from abnormal persistence of the branchial clefts or from an embryonal rest of the thymus canal. From what is known at the present time regarding the development of the branchial apparatus and the organs derived therefrom it was evident that these two cases could not be explained by any of the hypotheses advanced to date. The third case appeared clearly to be due to the persistence of the thymus canal in almost its entire course. In one case of lateral fistula the lesion was found to be a solid cartilaginous rest of the fourth branchial arch.

Of the seven median fistulae five were evidently due to persistence of the thyroglossal cord. One case was due to the accidental inclusion of ectoderm. In the last case which differed greatly from the others histological examination suggested that the condition had its origin in a group of cells of the floor of the mouth which became mechanically detached in the embryo and dragged inward by the thyroid.

No single interpretation explains the pathogenesis of all types of congenital fistulae and cysts of the neck because their formation is dependent upon different anomalies of embryonic development of the branchial apparatus and the organs derived from it.

Fistulae situated in the median line usually develop late. The epithelial cells become transformed primarily into cysts and secondarily into fistulae by some inflammatory process or an incomplete surgical operation.

The only satisfactory treatment of congenital cyst or fistula of the neck is complete eradication.

W. A. BEE, A.

Ros t usche M. The Thyroid at the Base of the Tongue (Zur Kenntnis des Schilddrüsens am Zungengrund) Deutscher Zehner 923  
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Rosstuscher reports the case of a 32-year-old woman who sought treatment for a tumor of the tongue which had been present for 10 years and had grown rapidly during the last six months, causing excessive mucus secretion and choking. Examination revealed that the base of the tongue was firm, tumor the size of a walnut. The thyroid gland could not be palpated in its normal position.

At operation performed under local anesthesia the trachea was freed and a careful search was

made for the thyroid but it was not found. A tracheotomy having been done and a Trendelenburg tube inserted the tongue was drawn out and a semicircular incision made over the tumor. On backward dissection of a flap a grayish globular tumor was exposed. Half of it was removed. Hemostasis was effected by means of catgut sutures and the mucous flap replaced. The cannula was removed on the following day. Except for slight infection of the tracheotomy wound healing occurred promptly. After six months the patient was free from complaint. Microscopic examination of the specimen showed it to be thyroid tissue.

About 100 cases of tongue goiter have been reported. Rosstuscher explains the biology of the thyroid and the genesis of ectopic and accessory glands. Clinically three types of tongue thyroid can be distinguished: (1) those with symptoms of hypothyroidism; (2) those in which besides the tongue thyroid another thyroid is found in the normal position; and (3) those in which the only thyroid tissue is found at the base of the tongue.

HAGMANN (2)

McCarrison R. Goiter B. M. J. 1914, 989

The stimuli which cause enlargement of the thyroid gland are of three kinds: nervous, metabolic, and microbial.

Simple goiter includes those forms of thyroid hypertrophy which are commonly spoken of as sporadic, epidemic, or endemic goiter, though there is no essential difference between them. Five per cent of goitrous mothers are liable to give birth to cretinous or otherwise defective children.

The three periods when thyroid disorder most commonly develops are: (1) fetal life; (2) adolescence; and (3) pregnancy and lactation. The conditions of life which favor the development of goiter are improper food, imperfect hygiene, and infection.

Deficiency in the supply of iodine may be due to insufficient intake, inadequate assimilation or utilization, or relative deficiency in proportion to other food constituents. The thyroid has a remarkable affinity for iodine. Ceteris deest, not develop if the iodine store of the gland is kept above 0.1 per cent. The maximum storage capacity of the normal gland is 30 mgm of iodine. The presence of sufficient iodine in the water supply will prevent colloid goiter and the hyperplasia which precedes it. It does not prevent or materially change the course of exophthalmic goiter, but not infrequently it stimulates overaction of adenomatous goiters and this once started may continue for years without further administration of iodine. Any unusual demand on the part of the tissues for thyroxine will stimulate the thyroid gland and result in hyperplasia.

While a deficiency of iodine is the immediate cause of thyroid hyperplasia and hypertrophy, it is not the ultimate cause. The ultimate cause is any agency which brings about a lack of iodine which interferes with its utilization, or which increases the needs of the organism for thyroxine.

The prevention and cure of goiter therefore depends chiefly upon (1) general hygiene and especially hygiene of the gastro-intestinal tract and (2) the amount of iodine available for the needs of the thyroid gland and the organism in general.

Conditions in the intestine may be such that the available iodine or other constituent of thyroxin is not utilized. In such cases constipation and imperfect drainage of the bowel must be corrected. In testinal antiseptics alone have been beneficial in reducing the size of a hypertrophied thyroid and their curative value in this disease is now beyond dispute. It appears that the disinfection of the bowel makes the iodine ingested more readily available for the needs of the thyroid. Possibly the presence of certain intestinal bacteria increases the needs of the organism for thyroxin as do certain infections or they rob the organism of the small amount of iodine contained in the food that would otherwise be available to the thyroid for the elaboration of thyroxin.

The method of preventing goiter by the administration of iodine is simple, rational, cheap and without ill effect if it is applied properly. Two grains of sodium iodide should be given in 102 gm doses over a period of two weeks every spring and fall. This treatment is best administered at the periods of life when goiter is most apt to develop. The call for it is more urgent in the female than in the male.

CYRIL J. GLASPEL, M.D.

McClendon J. F. and Hathaway J. C. Inverse Relation Between Iodine in Food and Drink and Goiter. *J. Am. M. A.* 924 1221 1968.

The quantitative analysis of the iodine content of food and water from goitrous and non goitrous regions of the United States showed a marked deficiency in the goitrous region. Variations as great as 1:18.470 were found.

Retention of iodine from a normal diet was demonstrated in a three day period during which the intake and output of iodine were carefully determined.

Statistics prove that in the United States both simple and exophthalmic goiter are caused by iodine starvation.

WILLIAM E. SMITH, M.D.

Pfaundler M. and Wiskott A. The Goiter Question in Bavaria (Zur Kr. pff. ge in B. 3. r.). *M. n. h. n. med. W. f. ch.* 923 I. 427.

The authors summarize in a table the replies received to a questionnaire which was sent out because of reports that the incidence of goiter in children in Bavaria is increasing. Of 170 replies only fifty nine reported such an increase and more than half denied it explicitly.

The zones with an apparent increase are scattered throughout the country without regard to the recognized goiter regions or geological, ethnographic, climatic, hygienic, cultural or social factors.

It is frequently claimed that goiter is increasing among the school children of the large cities. However, even if the goiters of adolescence are

counted, the frequency of goiter is not nearly as great in Bavaria as in Switzerland. In Switzerland endemic goiters beginning with symptoms of hypothyroidism and changing to endemic cretinism predominate and by iodine prophylaxis cretinism is attacked through the goiter. In Bavaria cases of hyperthyroidism are twice as common as cases of hypothyroidism and the frequency of this condition is not greater in the rural districts and in boys as in the case in Switzerland. Moreover in Bavaria there are few reports of local or endocrine changes in children, therefore many of those with goiter do not have a true thyroid disease. The symptom of goiter may be very differently interpreted particularly as regard the reaction to iodine.

The authors distinguish three chief types of goiter: (1) goiter due to compensatory changes, (2) goiter caused by external injuries, irritation, goiter, and (3) goiter of a blastomatous character, tumor goiter.

In cases of the first type as well as in goiter due to deficiency of iodine the administration of iodine may be beneficial or injurious.

In cases of Type 2 iodine is generally injurious.

In the cases of hyperthyroidism adults the authors agree with Sudeck that iodine therapy is to be avoided. Even among non goitrous persons there are some with glands ready for hyperfunction who would become thyrotoxic if given iodine.

In the authors' clinic more or less compensated hyperthyreoses associated with subnormal stature predominate while in their private practice there are more hyperthyroid goiters, especially cases of mild goiter heart associated with normal stature. Therefore physicians are justified in rejecting mass prophylactic treatment of school children even though the efficacy of iodine treatment is generally recognized.

According to Lenz iodine has a specific action not only on the fetus but also on the sperm cells. In experimental animals it has produced sterility. Even when it is given in small doses, iodine influences must be attributed to it which may cause hereditary injury. Therefore a general salt prophylaxis is not to be recommended for Bavaria as a whole but should be given a trial only in certain recognized goiter regions, especially among school children and under the direction of physicians. It is desirable also that insufficiency of iodine in food and water in Bavarian goiter regions be investigated.

TOELKEN (2)

Schroetter H. A Report on the Present Status of Goiter Prophylaxis in Austria (Bericht ueber den gegenw. Stand der Kropfphylaxie in Oesterreich). *W. f. ch.* 923 1221 1968.

The fact that goiter is increasing not only in the Alpine valleys but also in the lowlands and particularly in the city of Vienna has stimulated further study with regard to the cause and distribution of the condition and the means of combating it. The Wagner-Jauregg theory advanced twenty five

years ago that the cause of goiter is insufficiency of iodine in the food has found many more adherents than the theory attributing the condition to infection.

The health authorities have now (April 5 1923) decided to have prepared and distributed to the public under the name entire salt a common salt to which iodine has been added. This salt contains in accordance with Wagner Jauregg's proposal 0.005 gm of potassium iodide per kilo. Therefore when about 10 gm of common salt are consumed daily the organism receives 0.05 mgm of iodine. Many sea salts—the French for example—which contain as much as 0.012 gm per kilo are not injurious.

Iodine medication must be suited to the type of goiter and remains the province of the physician. By the constant administration of common salt containing iodine it is sought to eradicate goiter and cretinism automatically as it were and independently of the inclination or disinclination of the subjects. This will affect not only school children and adolescents but the entire population and will be both a therapeutic and a prophylactic measure.

In the manufacture of the entire salt sodium chloride is well stirred while iodide of potassium is distributed upon it in a fine spray. Tests show approximately even distribution in the form of precipitate or absorption. If the salt is kept from one to two months the iodine will collect in the upper and lower layers but this can be prevented by stirring it from time to time. The price is the same as that of ordinary salt.

In all state and public institutions iodized salt is already used exclusively in the preparation of food. One million copies of a pamphlet by Wagner Jauregg entitled *Goiter and the new cooking salt* are being distributed by the government as propaganda for goiter prophylaxis. In addition an illustrated questionnaire is sent out to obtain accurate information regarding the incidence of goiter among school children and adolescents (elementary high and technical schools and private educational institutions) in order that the figures previously given for the different districts may be corrected and brought up to date.

Surgical intervention is indicated by pressure on the respiratory passages interference with vital functions or dystrophic changes in the organ (Basedow). In such cases operation should be performed without hesitation.

In conclusion the author makes the proposal that the central government be called upon to meet the cost of and make

1. Geological hydrological and meteorological studies of the distribution of iodine in drinking water and river water and analyses of samples of soil.
2. Experimental and clinical investigations on the endocrine system.
3. Further collections of statistics regarding the occurrence of goiter in Austria. ZITEX (Z)

**Blicher E.** Experimental Research on Basedow's Disease (Experimentelle Untersuchungen ueber Morbus Basedowi.) *S hu med Wchnschr* 1924 liv 54

The author refers to experimental work he reported in 1912 and in which he succeeded in creating Basedow's disease in dogs by implanting thymus tissue. In three cases in which material obtained from clinical cases of Basedow's disease was used he succeeded completely in producing the classical signs of this condition viz protrusion of the eyes, gaping of the eyelids, changes in the heart action with strong pulsation in the carotids, lymphocytosis, leucopenia, a distinct struma, twitches, general restlessness, excitation and glycosuria. In three other cases in which he implanted infantile thymus, the exophthalmos and increase in pulse frequency were only temporary. According to Nordmann Hart, infantile thymus does not have a toxic effect. The results were more marked after implantation than after injection of the expressed juice.

It is probable that by way of the nerves the toxin attacks the circulatory system first and then the thyroid before the other endocrine glands. Histologically the adrenals are also affected. After thymus implantation marrow hypoplasia is found. In the pancreas atrophy and a decrease in the Langerhans cells were noted in one case. The spleen showed diminution and shrinkage of the follicles.

To study the causes of thymus death the thyroid was removed from experimental animals from thirty to fifty days after the implantation. The implant then slowly atrophied. From eight to ten days after the removal of the thyroid the animals developed apathy with an increase in the pulse rate, muscular tremors, edema and loss of hair and death occurred with a decrease in the blood pressure and quickening of the respiration and pulse. The impression was gained that as the result of the removal of the thyroid which acts as an antagonist to the thymus, the adrenals are no longer sufficiently stimulated and hyperthyrmization results.

The author concludes from his experiments that the thymus can cause a decided disturbance in the entire glandular system and can produce definite Basedow's disease.

DELS (Z)

**Salvesen H. A.** Studies on the Physiology of the Parathyroids. *Acta med Scand* 1923 5 pp vi

The removal of three parathyroid glands in dogs (eight experiments) did not produce tetany in any case. The blood sugar remained unchanged, the alkali reserve was usually lowered temporarily and the serum calcium was reduced from 10 to 7 mgm per 100 ccm of blood.

The subsequent removal of the fourth parathyroid gland in six of the dogs and the removal of four parathyroid glands in four furnished the material for studies of what the author designates as complete parathyroidectomy. Five of these dogs died of tetany within three and one half days and one in twenty two days. Four were saved.

by repeated intravenous injections of calcium chloride a milk diet and in some cases the administration of calcium salts by mouth. When tetany occurred the blood calcium was always found to be below 7 mgm per 100 ccm of blood. The dogs that were saved by the calcium treatment developed tetany when placed on a meat diet but recovered again when given milk.

Milk freed of its calcium was not found effective in preventing tetany. During the stage of latent tetany the nitrogen metabolism was normal but the carbohydrate tolerance was lowered. A subcutaneous injection of 3 gm of guanidine chloride caused convulsions but had no effect on the blood calcium.

The author concludes that the cause of the symptoms of parathyroid insufficiency is calcium deficiency.

LISTER R. DRAGSTEDT MD

Collet F J. Twenty Five Cases of Laryngeal Hemiplegia Due to War Injuries. The Innervation of the Larynx (Vi gt-cinq a dhém-plé-gia pa-bles es d gu-cons léat ns u-rat ns du larynx) A h nter d d l yngol 1948 509

From a detailed clinical study of twenty five cases of laryngeal hemiplegia due to war injuries the author draws the following conclusions:

Laryngeal hemiplegia from war injuries is due as a rule to a lesion of the vagus and more rarely to an injury of the recurrent laryngeal nerve.

A lesion of one vagus alone is sufficient to give rise to cardiac disturbances. The most common cardiac disturbance is permanent acceleration of the pulse, the rate sometimes being as high as 140. After many years a cardiac disturbance may be found unchanged or worse. In addition to tachycardia the characteristic irregularities of the pulse at times extra-systoles but most often the suppression of the oculocardiac reflex.

Hemiplegia may be simple or of the glossolaryngeal or palatolaryngeal pharyngolaryngeal or laryngoscapular type. The presence of complications may indicate the level of the injury in the vagus and also its location in the upper part of the pleuroform ganglion.

In cases of simple laryngeal hemiplegia the presence of sensory involvement is the best criterion of involvement of the superior laryngeal nerve. The fixation of motor disturbances in addition to those characteristic of recurrent nerve palsy is more difficult. In some cases the failure of the tensor palmaris to be the dominating factor.

The distinction between a lesion of the vagus below the superior laryngeal nerve and an injury of the recurrent nerve rests on the cardiac disturbances. Many cases of so-called recurrent nerve lesion may be cases of paralysis of the vagus also and the emergence of the recurrent nerve.

The epiglottis has been found detached only in glossopharyngolaryngeal hemiplegia. This deviation has been a constant.

Vasomotor involvement is very rare and has been noted only in high lesions capable of affecting the superior laryngeal nerve with involvement of the hypoglossal or the main sympathetic. The recurrent laryngeal nerve does not appear to contain vasomotor fibers. These findings are in accordance with experimental data.

The paralyzed vocal cord is usually immobilized in the cadaveric or the midline position without paralysis of the tensor. The fixation of the cord in the median position is relatively more frequent in traumatic lesions than in myxedematous paralyzes.

Only traumatic palsies permit specification of the date of compensation by the healthy cord. The phenomenon is defined in the first 6 months, sometimes sooner and usually is well established at the end of four or five months.

Median fixation of the cord is a paralytic and an irritative phenomenon as believed formerly. It coexists with the phenomena of dysphagia—the tachycardia and the suppression of the oculocardiac reflex.

Except for the filaments supplying the laryngeal transverse arytenoid muscle the findings in traumatic laryngeal hemiplegia do not support the hypothesis that there is a partial intermingling of the laryngeal nerves either sensory or motor. As it does they indicate that a supplemental innervation is furnished by the superior laryngeal nerve to the muscles innervated by the recurrent laryngeal nerve.

WALTER L. DIXON MD

Kramer R and Banker S. Hemangioma of the Larynx. L yngol 1948 405

To the seventy five unquestioned cases of hamangioma of the larynx reported in the literature which were critically reviewed by Moore in 1922 the authors added fourteen others, thirteen of which occurred in their private practice.

Hemangiomata are benign tumors originating from the blood vessels and are of two types: (1) hemangioma simplex in which the walls of the fully formed vessels are more or less parallel with each other and (2) hemangioma cavernosum which is made up of irregular blood spaces. Secondary complications are inflammation, hemorrhages by laceration, amyloid degeneration and pigmentation of the tumor. The etiology is unknown. On the basis of the cases reported in the literature and their own reports, the authors agree incidence is between 40 and 60 years. Theoretically the neoplasm is a tumor of adult life. Congenital hemangioma occurs in childhood and is different from the one here described. From 5 to 35 per cent of hemangioma occur in males.

In cases of hemangioma of the larynx the relation to a history of laryngeal irritation. As to the relationship of this factor to the existence of hamangioma must be borne in mind. The authors believe irritation the cause. The subjects of symptoms in the cases reviewed were disturbances of

speech (hoarseness occurred in over 50 per cent) disturbances of respiration (dyspnea occurred in 5 of the cases previously reported) disturbances of deglutition (dysphagia and vomiting occurred in a small percentage) disturbances of sensation in the form of parästhesia and hemorrhage (bloody expectoration occurred in 15 per cent). The duration of the symptoms ranged from four weeks to fifteen years. The tumors ranged from 2 mm to 4 cm in diameter and were red. Some were sessile but the majority were pedunculated. While every portion of the interior of the larynx has been involved the tumors are usually found on one of the vocal cords. The most characteristic finding is the phonation sign. On phonation the tumor shows increased firmness, erection and slight diminution in size and takes on a darker hue. The authors consider the phonation sign most important in the differential diagnosis from peduncular granuloma, cysts, fibromata, varices, submucous hemorrhages and vascular malignant tumors. In cases of congenital hemangiomas which are usually situated below the cords and are sessile the principal symptom is respiratory difficulty.

A spontaneous cure of hemangioma has not been recorded. The prognosis following treatment depends on the size and type of the tumor and the method of treatment. In all of the authors' cases the cure has been complete to date. Their method of treatment has been surgical removal either by indirect laryngoscopy and the use of cutting forceps or by suspension laryngoscopy and sharp dissection. The authors believe that all of the small tumors should be operated upon by means of forceps or a snare under direct or indirect laryngoscopy and that large tumors are best attacked by suspension laryn-

goscopy and sharp dissection. As in cases of small tumors radiation does not give as good results as operative procedures it should be reserved for more or less wide spread lesions and recurrences.

MAYNARD R. WALTZ, M.D.

**Blair, V. P. Radical Operation for Extrinsic Carcinoma of the Larynx. In *Otol Rhinol Laryngol* 924 x 111 373**

Blair is of the opinion that even after a carcinoma has extended well beyond the confines of the larynx either directly or into the lymphatic nodes of the neck it may still be curable by proper surgery.

Light thorough packing of the resulting wound is a much safer procedure than primary suture with free multiple drainage. Packing of the wound and the upper end of the trachea should be carefully maintained until the wound has healed spontaneously or the fistula is closed by secondary suture.

The author believes it is best to remove the involved tissue in one mass and so that the closure of the external opening will be spontaneous or will require only a simple secondary operation.

Preliminary tracheotomy was necessary in almost every one of the eight cases reported by Blair. A large opening was made several days or weeks before the radical operation and the trachea isolated after the plan of Crile.

Of the eight patients whose cases are reported two who had extensive extralaryngeal involvement have lived six years or more after the operation without recurrence. One patient has been free from recurrence for more than three years. There was one death from recurrence. In the author's opinion the three postoperative deaths might have been prevented.

JAMES C. BRADY, JR., M.D.

## SURGERY OF THE NERVOUS SYSTEM

### HAIR AND ITS COVERINGS CRANIAL

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I have run into the reported case of  
my friend from Iain about a high level of

that a more correct percentage is 33 for temporo-sphenoidal abscess and from 10 to 15 for cerebellar abscess.

An abscess should be operated upon in a hospital by a special team who are doing only that work. Operation should be done immediately as soon as all data have been obtained and provision has been made for every technical procedure that may be necessary. This preparation includes the recording of the history in detail, a complete neurological investigation made preferably by the surgeon himself, the study of the visual field, and an X-ray examination. Care should be taken in doing lumbar punctures since in localized suppurative diseases of the brain they are dangerous. In the operation on a temporo-sphenoidal lobe abscess a large flap should be formed. The operation is hard manual labor but should be done as quickly and as bloodlessly as possible. The intradural work must be done with the greatest delicacy and the most painstaking technique.

The facts that in meningitis septic symptoms are due to alteration in the character of the spinal fluid and that in nearly all cases the condition is at first localized have led Eagleton to the conclusion that recovery is more apt to result if the localized collection of fluid is evacuated. He now operates on cavernous sinus thrombosis by ligating the common carotid, eviscerating the orbit, removing the wing of the sphenoid and opening the sinus. His two recoveries he attributes to the elimination of the motion produced within the sinus by the pulsating artery.

MANTORD R. WALTZ, M.D.

Pussep, L. Tumors in the Region of the Sella Turcica and Their Operative Treatment According to the New Fronto-Orbital Method. (Die Geschwulste der Region sellae turcicae und ihre Operation. Dtsch. Med. Wochenschr. 1924, 50, 1151-1154.)

The author reports sixteen cases in detail. All of the patients showed the picture of Fölsch's dystrophia adiposogenitalis and some of them evidences of acromegaly. Nearly all of the tumors extended beyond the sella turcica into the base of the cranium. By means of the transnasal or the temporal route it may be possible to remove a portion of such a tumor and to reduce the pressure giving temporary symptomatic relief but radical removal of basal tumors in this manner is impossible.

The author therefore devised a new method and in a period of ten years has employed it nineteen times. The infundibular region is approached under the frontal bone on one side through a supra-orbital incision curved with its convexity upward. The frontal bone is turned down as a flap over the eye. The frontal sinus is removed, the roof of the orbit is broken away, the dura is opened by means of a flap and the anterior horn of the lateral ventricle is punctured in order to collapse the brain. This having been done the frontal lobe can

easily be pushed upward and the way behind the chiasm is free. The tumors or cysts are removed radically if possible and the wound is closed after drainage for twenty-four hours.

In three of eight cases of sarcoma a permanent cure was obtained in four deaths followed the operation immediately and in one it occurred eight months later. Of three cases of adenoma all were cured. In one of these cases there was a family history of tumor of the hypophysis. Excellent results were obtained also in four cases of cyst. The cysts were radically removed not merely drained. The recession of practically all symptoms even severe disturbances of vision was remarkable.

To date a pre-operative differential diagnosis between the various types of hypophyseal tumors has been impossible.

In cases of acromegaly the bony changes persisted but the changes in the soft parts disappeared partially.

The author regards both dystrophia adiposogenitalis and acromegaly as evidences of compression or disturbance of the nerve centers at the base of the brain particularly in the region of the hypothalamus. It is possible that they have nothing at all to do with the hypophysis. This is indicated by the fact that after total removal of the hypophysis performed on animals by Camus and Roussy dystrophia adiposogenitalis did not occur also by the fact that after the removal of the entire hypophysis in the author's cases the symptoms receded and a complete clinical cure of the syndrome resulted. Pussep's theory is strengthened by roentgenograms made by other investigators which showed the sella turcica not enlarged and by those in one of his own cases which showed it to be flattened and smaller than normal.

In cases in which on the basis of the roentgen ray picture uncomplicated disease of the hypophysis is suspected the nasal approach is equally as good as the fronto-orbital approach and perhaps better. For the localization of the tumor good differential points are afforded by the signs of increasing pressure in the brain such as symptoms in the region of the oculomotor or even the trigeminal nerve which reveal a tumor growth in the cranial cavity and indicate the fronto-orbital approach.

RIGGE (Z)

Smith, S. Aneurism of the Basilar Artery Simulating Opium Poisoning. *B. M. J.* 1924, 1, 994.

Smith reports the case of a man 30 years of age who became suddenly ill with headache, vomiting and chill. Loss of consciousness followed in a few hours and death occurred at the end of four days. A diagnosis of opium poisoning was made but treatment for this condition was without effect.

At postmortem examination all of the organs were found normal except the base of the brain where a fusiform aneurism of the basilar artery was discovered. The aneurismal sac was filled with a non-organized clot and rested in a depression which it





thetic or a unilateral vagus operation was done, but pain persisted. Moreover the patient operated on by the author while remaining free from the radiating pain in the left arm suffered a return of pain in the thorax and gastric region after four months despite the fact that the entire left cervical sympathetic including the first thoracic ganglion was removed. It appears therefore that none of the operations on the sympathetic—at least none of the unilateral operations—attacks the cause of the trouble.

The author discusses the various theories advanced as to the course of the nerve fibers which conduct the conduction of pain. From the fact that the operations mentioned have stopped the pain he concludes that surgery justified when appropriate internal treatment continued for a sufficient length of time fails to give relief and provides the conduction of the heart allows operation. It is still an open question whether in attacks of angina pectoris which threaten life the patient should be operated on as early as possible. The acute stage of an attack can be removed by the paravertebral injection of from 30 to 40 c.c. of 0.5 per cent novocaine-adrenalin solution in the lower part of the cervical plexus. This method may prove of value for the determination of pain conduction.

The author advocates early operation in angina pectoris due to vasomotor or nervous cause. He operates first on the left sympathetic with removal of the first thoracic and all the cervical ganglia. If the pain radiates to the neck and occiput the superior cervical sympathetic should be removed. It remains undecided whether in some cases it may not be better to remove the depressor nerve. Instead of simultaneous operation on the sympathetic and depressor the author proposes paravertebral sympathectomy and removal of the common vascular sheath of the depressor and descending hypoglossal. The danger of the operation is slight particularly if local anesthesia is used.

In conclusion Kappeler discusses changes in the blood pressure. In most cases the blood pressure falls after operation.

HILL (Z)

Dr. J. M. P. Th. Operat. Treatment of  
Toph. Disturbance by Paravertebral Sym-  
p. thectomy (Z. p. 1. B. h. d. l. p. h.  
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Even after the elimination of the etiological factors cases of viscous ulcer show gastric stagnation due to disturbance of valvular tonus. Therefore in certain cases the utilization of the operation for the removal of the vagus paravertebral sympathectomy on the first thoracic vertebra did not appear to hasten the healing of the ulcer, but by relieving the gastric pressure of the arteriole caused immediate cessation of the pain.

Similar phenomena were noted in a case of very painful roentgenul of the hand. Viscous ulcer effluxed by perivascular sympathectomy in the

healing of chronic ulcerative processes can be expected only in cases in which the factor chiefly responsible is an angio-spastic condition. STAHL (Z)

Placintanu G. Investigations on Wound Healing and Transplantation After Sympathectomy  
(V. u. h. u. e. l. u. i. h. e. l. u. g. u. d. t. a. n. i. l. t. a. t. i. o. n.  
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1. 243

By the end of the eighth day after unilateral resection of the cervical sympathetic in rabbits a difference was observed between the normal and the sympathectomized side in skin defects made in the ears. The epithelialization was more advanced on the sympathectomized side than on the normal side and on microscopic examination the side operated upon showed more newly formed capillaries, wider old capillaries, more abundant granulations, greater dilatation of the lymphatics and in marked contrast to the side not operated upon no tissue necrosis. Sympathectomy caused definite signs of hyperæmia and more rapid regeneration.

STAHL (Z)

## MISCELLANEOUS

Rollston S. R. L. Holmes G. Scott S. and  
Others. Discussion on Vertigo. P. o. R. y.  
S. M. d. L. d. 94. VII. Sect. Med. Neur.  
O. r. i. g. i. n. & O. c. c. u. r. s. i. s.

ROLLSTON discussed the subject of vertigo from the standpoint of the physician as apart from that of the otologist or neurologist.

That toxic, ascular and functional disturbances at the cortical end of the vestibular system may cause vertigo appears evident from the occurrence of vertigo as an aura in epileptics in the absence of a convulsion. It is suggested also by the analogy of migraine and the occasional alternation of migraine and vertigo.

With regard to the manner in which general disease and visceral disorders affect the vestibular apparatus the following conditions were mentioned:

1. Anaphylactic conditions affecting the semicircular canal.

2. Endocrine disorders which induce vertigo by modifying the vasomotor conditions in the vestibular labyrinth.

3. Gastrointestinal disturbances. These may give rise to vertigo either reflexly through the brain stem by causing a fall in the pressure of the fluid in the vestibular labyrinth or by generating poisons which act directly upon the vestibular system.

4. Arterial disease. The association of disease of the arteries with vertigo may be the result of high blood pressure causing increased pressure of the intralabyrinthine fluid or of vascular spasm of the vestibular artery or the cerebellar pontine or cerebellar stem. When arterio-sclerosis is combined with renal disease vertigo may be due to increased exudation of fluid in the semicircular canal, corresponding to edema elsewhere, change in the vestibular nerve comparable to those in the optic nerve.

the action of uramic poison or uraemia on the brain stem, cerebellum and cortex. In malignant endocarditis embolism of the vessels of the labyrinth may cause vertigo by interfering with the conduction in the semicircular canals.

5. Laryngeal vertigo. This condition has been explained as (1) a form of equilibrium disturbance resulting from theagus reflex to that of the vestibular nerve and (2) the result of the sudden increase of pressure in the semicircular canals or small extravasation secondary to violent expiration effort.

6. Bilateral diseases. Both anoxia and erythraemia may cause giddiness. The latter probably affects the vestibular labyrinth while the former may affect either the semicircular canals or the medullary centers and cortex. Leukemia causes infiltration of the semicircular canals with reticular hemorrhage.

Holmes divides vertigo from the neurological standpoint dividing it into three types: (1) that due to focal cerebral lesion, (2) that due to diffuse cerebral involvement and (3) that occurring as a symptom in other nervous diseases.

The localization is suggested as: (1) the one of the posterior fossa and (2) the one of the cerebrum.

The posterior fossa lesions are: (1) lesion of the intracranial portion of the vestibular nerve and (2) diseases of the portions of the central nervous system which are intimately though indirectly connected with the labyrinth such as parts of the medulla cerebellum and midbrain.

The lesions of the cerebrum are those that involve the cortex or subcortical white matter.

The diffuse cerebral lesions are: (1) cerebral arteriosclerosis, (2) anoxia, (3) other effects of the toxic and vascular system, (4) cerebral neuronitis, (5) infectious diseases, (6) traumatic lesions on the brain.

The other nervous diseases which cause vertigo are epilepsy and migraine.

Scott discussing vertigo from the otological aspect mentions possible peripheral causes such as infectious labyrinthitis, labyrinthine irritation from middle ear disease and rotary nerve tumor or ossification especially unilateral and ineffectiveness of the eustachian tube.

Barra spoke from the ophthalmological aspect, stating that the part played by the eyes in the maintenance of equilibrium depends in the main upon the function of the internal and external ocular muscles.

Dumas-Crout in discussing the difficulty of diagnosis in cases of suspected Meniere's disease, cardiac syncope, laryngeal syncope and petit mal, said that if small doses of quinine do not cause a diminution of the vertigo in unilateral cases the cause is probably not in the semicircular canal. He believes that quinine equalizes the influence of the two labyrinth by its sedative action on the sound labyrinth.

He spoke also of some recent experiments which have been made with regard to the action of the sympathetic nerve on the circulation in the labyrinth and the consequent changes in response of the labyrinth to caloric tests. Both the vertebral arteries were blocked up where they entered the skull and one carotid canal was tied. The circle of Willis being therefore supplied by only one carotid. The rapidity of response to the caloric test was then determined in the ear of the same side as the open carotid and the time required to initiate nystagmus was noted. When the sympathetic in the neck was stimulated on that side contraction of the blood vessel resulted and a multiple period was required for the initiation of nystagmus.

CHAS. A. K. TRIMMER

# SURGERY OF THE CHEST

## TRACHEA LUNGS AND PLEURA

Jackson C. Indications for Bronchoscopy. *Am Surg* 1941; 36

In cases of lung abscess thoracotomy should never be delayed in order that bronchoscopic therapy may be given a trial. When external operation is postponed for other reasons, bronchoscopic aspiration may be used both for diagnosis and treatment. When suppuration is due to a foreign body, removal of the foreign body by means of the bronchoscope is frequently followed by recovery, but this is not true of postpneumonic and postinfluenza processes.

Bronchoscopy is of value in localizing the suppurative process and ascertaining its cause. If operation is postponed, granulation tissue may be removed and pus aspirated through the bronchoscope as frequently as necessary. Bronchoscopy renders possible also the early diagnosis of malignancy of the lung.

L. W. ZIMMERMAN, M.D.

Baillet L. Measurement of the Intrapleural Pressure in Artificial Pneumothorax (Measure of the pressure in the pleural space by means of a tube). *J. Med. Biol.* 1941; 33:1

The three principal causes of error in the measurement of intrapleural pressure in artificial pneumothorax are: (1) an incorrect conception of the physiological aspects of the phenomenon; (2) misunderstanding of the more elementary laws of physics; (3) defective apparatus.

Instead of resembling a rubber balloon with elastic walls in which the volume increases with the pressure or inversely according to a known law, artificial pneumothorax does not have a fixed volume and pressure because the cavity wall (mediastinum, thorax, and lung) are extensible but not elastic. Large quantities of gas may be introduced with increasing the pressure; they only compress the lung, depress the diaphragm, or push in the mediastinum. The intrapleural pressure is not static but dynamic and varies with respiration without a moment's repose. Equilibrium would necessitate a period of apnoea which is not permissible. Therefore only a graphic registering instrument, not a manometer, will demonstrate the pressure conditions accurately.

The water manometer damps and amplifies the oscillations. The intrapleural pressure is increased by the capacity of the apparatus and the latter may be equal to or even greater than the intrapleural pressure. Such an instrument would not be satisfactory for negative pressures. Manometers that damp the oscillations by a pointer on a vertical liquid are also unsatisfactory.

Baillet summarizes his article as follows:

1. The volume of the artificial pneumothorax cavity varies constantly because of respiration deformities caused by the artificial pneumothorax itself (compression of the lung, depression of the diaphragm, deviation of the mediastinum) and the absorption and gaseous exchange which modify the composition of the mixture.

2. Variations of volume cause continuous changes in pressure. Therefore not a manometer (which requires static equilibrium) but a graphically registering (dynamic) instrument is necessary to record the pressure at each moment's variation and to study the intrapleural pressure.

3. The graph represents almost the normal respiratory curve. Inspiration covers one third and expiration two thirds of the period.

4. A deadener placed on the tambour of the instrument reduces the oscillations to a barely perceptible undulating line and divides the respiratory curve into two almost equal parts which it erroneously

5. The measurement of intrapleural pressure by a manometer (static) is inaccurate as the volume is constantly changing.

6. Measurement of the pleural pressure with a manometer deadened by a large branch pointer or viscid liquid gives a figure which is integrated periodically in the graph but would not be expressed by it alone.

7. If it is necessary to obtain a figure the maximum pressure at the end of expiration, best determined because (a) expiration being passive the maximum pressure is less variable than the minimum and easier to read and (b) the form of the graph shows that the last half of expiration more nearly approaches equilibrium when the errors due to the inertia of the instrument are diminished. The pressure should be taken with a Marey sealed tambour or an aneroid metallic manometer.

In Baillet's opinion the Kuss curves of the variations of intrathoracic pressures are of no scientific value.

In conclusion the author states that instead of controlling artificial pneumothorax by a single examination of the intrathoracic pressure an X-ray examination should be made as often as possible or the method of tracings employed.

WALTER C. BURKET, M.D.

Schlaepfer K. Ligation of the Pulmonary Artery of One Lung with and without Resection of the Phrenic Nerve. *Am Surg* 1941; 33:2

By placing the lung permanently at rest, ligation of one pulmonary artery with or without phrenicotomy induces fibrosis and thus permanently con-

trials free from infection. Since the procedure is relatively free from shock it is a safe preliminary to a more radical lobectomy or pneumectomy. The intact lung assumes the nutritive respiratory function and requires nothing more than the usual attention. The surgical dissection of the paralyzed pleural cavity is the first step in lung resection and more. As the mainstay of the thoracic cavity is the only valuable structure expansion of the intact lung takes place without difficulty.

WILLIAM S. COOPER, M.D.

### MISCELLANEOUS

Martin C. F. *Application of the Bronchoscope in the Diagnosis and Treatment of Cancer of the Lungs*. *Annals of the Chest*, Vol. 1, No. 1, 1924.

The author comments on the large number of cases of foreign bodies in the bronchus reported by American compared with the relatively few reported in Europe. He believes that a great many such cases are unrecognized.

The symptoms of a foreign body are largely clinical. Heoltz has described the coughing of the larynx and the sound auscultation above the larynx in the trachea. The author stresses the importance of a careful study of the X-ray

picture in all cases presenting clinical evidence of foreign body in the bronchus. In those in which the roentgenogram fails to define the bronchus, the scope should be used in all cases.

The most common examination is a visual one with the winged blades.

When the history suggests a foreign body, the roentgenogram is a foreign body in the bronchus.

When with a positive history there are physical signs of a non-opaque foreign body in the bronchus, which cannot be detected by the X-ray.

Cases of bronchiectasis. In the case of the foreign body, the patient usually has the presence of a foreign body and the administration of local treatment.

Cases which show the physical signs of a foreign body but not the X-ray picture of a foreign body.

Cases of foreign body due to non-obvious causes of the lung.

Tracheobronchial stenosis. In the bronchoscopic treatment of the bronchiectasis, the author uses alcohol. This sets up a light irritation which is also the wall of the cavity.

Cures have been reported but after retreatment the patient seems greatly benefited.

WILLIAM S. COOPER, M.D.





Among the findings differentiating carcinoma gastritis from ulcer gastritis are the precarcinomatous cell forms—Hauser's new cell type. Metaplasia of intestinal epithelium is found chiefly in the most changed regions of the stomach but not in the regeneration zone of the ulcer scar. Therefore this metaplasia is to be regarded as a sign of gastric degeneration not as a regeneration product.

Many factors indicate that ulcer gastritis is a primary condition and an etiological factor in the development of ulcer. It is apparent however that ulcer and ulcer gastritis may establish a vicious circle. With the exception of one case the gastric changes in the specimens studied had caused irremediable changes in the mucous membrane. All of these findings taken together indicate that the best treatment is exclusion of the most severely affected portion of the stomach by one of the Billroth procedures. Transverse resection is comparatively unsatisfactory and gastro-enterostomy least satisfactory.

HELLER (Z)

PATERSON H J Wilcox Sir W Burgess A H and Others Discussion on the Treatment of Severe Gastric and Duodenal Haemorrhage  
Proc Roy Soc Med Lond 1941 Sec 1 Surg Med Theor & Pathol 1

**PATERSON** Haemorrhages from gastric and duodenal ulcers may be classified in two distinct groups viz acute haemorrhages and chronic or recurrent haemorrhages.

In acute haematemesis the collapse induced by the loss of blood is favorable for the arrest of the haemorrhage but unfavorable for surgical intervention. Usually the bleeding can be arrested by medical treatment. If medical treatment fails surgical interference is not apt to be of aid.

Most clinicians are agreed that the mortality from haemorrhage in cases of gastric and duodenal ulcer treated medically is under 5 per cent. In the tables compiled by Paterson it is 3.8 per cent. Lundberg tabulated eighty-three cases operated upon immediately in which there were thirty deaths, a mortality of 36 per cent. Later statistics from London Hospital showed a mortality rate of 36.8 per cent in cases treated by operation.

The important points in the medical treatment are the following:

1 Rest in bed. The patient should be kept absolutely still, no movement of even the arms or legs being permitted.

2 Triple injections of hot water by rectum and of saline solution at a temperature of from 120 to 130 degrees F.

3 The application of an ice pack to the abdomen.

4 Dietary treatment. Nothing should be given by mouth for at least four days. At the end of that time feeding may be begun with teaspoonful oficed milk and egg and this amount gradually increased. A milk diet should be given for two months. Thereafter some diluted beef essence may be added to the dietary.

5 Small doses of morphine.

6 The subcutaneous daily injection of 1 to 2 per cent solution of sterile gelatin in doses of 40 c cm.

7 If vomiting or haematemesis continue very gentle lavage of the stomach with warm water followed by a dose of crystalline bismuth subnitrate given through a tube.

When the patient has recovered from the resulting anaemia operation should be performed to prevent recurrence. The interval between the haemorrhage and operation should be at least three months.

In cases of chronic or recurrent haemorrhage operation should usually be deferred for two or three months after the last haemorrhage according to the patient's condition and medical treatment should be given in the meantime. An important detail in the medical treatment of chronic or recurring haemorrhage pending operation is regular gastric lavage.

Of the operative measures gastrojejunostomy is the simplest and safest procedure and in the great majority of cases may be relied upon to prevent recurrence of the haemorrhage. Haemorrhage is not an indication for resection of the stomach. If more than gastrojejunostomy is considered advisable infolding of the ulcer or its cauterization by the Balfour method is safer than resection and equally efficacious.

Careful and prolonged medical treatment after operation is as important as medical treatment before operation.

With the combination of medical treatment followed by gastrojejunostomy the mortality rate from haemorrhage in gastric or duodenal ulcers should not exceed 4 per cent and freedom from recurrence may be expected in 90 per cent of the cases.

Frequently the wisest and only safe course is inaction but this is always difficult. Anyone can try to do something but it is the strong man who refuses to be tempted into taking risks which he believes can serve no useful purpose.

**WILCOX** Gastric and duodenal haemorrhages are due to so many different causes that no routine method of treatment can be laid down. Though gastric and duodenal ulceration are responsible for many of the severe cases it would be unsafe to assume that the treatment to be adopted in a severe case of haemorrhage should be that for a bleeding septal ulcer. Each case must be treated according to its etiology. Some of the most severe cases of gastric haemorrhage have been due to such conditions as cirrhosis of the liver, splenic anaemia, gastric erosions, gastro-taxis and chronic toxæmia. In these the treatment usually given for bleeding septal ulcer was often contraindicated.

It is generally agreed that nothing should be given by mouth in the first two or three days following the haemorrhage. The stomach is probably full of blood more or less partially digested and until this is evacuated it is useless to attempt giving either food or drugs by mouth. About 15 oz of normal saline solution to which 4 per cent glucose has been





In the cases subjected to exploratory laparotomy the average duration of the disease previous to the patient's admission to the hospital was estimated at seven and one half months. The reasons for inoperability were complications such as metastases in the lymph node at the hilum of the liver in the pancreas in the transverse colon and at the root of the mesentery. Of the fifty-two patients subjected to exploratory laparotomy forty-nine died within six months after the operation and the rest were alive after about three and one half months. Three patients are still alive. In one of these the operative findings were an ulcer on the upper third of the lesser curvature which showed malignant degeneration and had perforated into the pancreas and formed metastases in the gastric ligament and peritoneum. Roentgenograph after four years revealed a healthy stomach. In another case there was an extensive hard carcinoma at the lesser curvature with metastases in the retroperitoneal lymph node. After six and one half years the patient is free from symptoms.

Of the 104 gastroenterostomies eight were of the posterior and twenty-four of the anterior type. The postoperative mortality was 0 per cent. The striking feature in some cases, as in the third pulmonary and hepatic metastases developed immediately after the operation.

Of the resections twenty-nine were of the Billroth I type and 8 of the Billroth II type. In twenty-four of these cases there had been symptoms for thirty years. The operative mortality was 0 per cent. Most of the patients died from peritonitis.

Of the eighty-five surviving patients from whom definite information was obtainable twenty-three are still alive and these were examined clinically and roentgenographically. Of the patients with carcinoma 15 per cent are living of those with non-tensoid carcinoma 20 per cent of the non-tensoid carcinoma at the greater curvature only two (after three years and of twenty-five with carcinoma at the lesser curvature 36 per cent (after from three to six and one half years). Accordingly carcinoma of the lesser curvature has the most favorable prognosis. The histological findings gave no indication as to survival.

H. L. R. (Z)

Stein G. and Fried E. In continuation of Calcium and Pancreatic Function After Extensive Resection of the Stomach. *Illinois Medical Journal* 1933; 65: 75.

The authors report fifty-eight investigations on thirty-eight patients. In nine cases (one of ulcer, one of carcinoma and one of peptic stricture) the secretory condition of the stomach and duodenum were studied before and at various periods after operation. In seven cases (fourteen of ulcer and three of cancer) the studies were incomplete. Five

persons with a normal stomach and intestines were used as control.

By means of a duodenal sound gastric juice was obtained from the fasting or unstimulated stomach. The sound was then advanced into the duodenum to obtain duodenal juice. After this a test meal was given sometime immediately and sometimes twenty-four hours later. The investigations with the duodenal sound were carried out so gently that it was possible to begin them as early as the third week after operation. Roentgen and histological examinations were also made.

Acidity was determined by titration. The amount of pepsin was ascertained by the casein test that of rennin by means of fresh milk obtained always from the same cow and with and without the addition of calcium chloride that of trypsin in the duodenal juice by the casein test and that of diastase by means of a 5 per cent starch solution by Wohlgemuth's method.

In the five control cases the quantity of free hydrochloric acid and the total acidity varied widely in juice from the fasting stomach but in the test breakfast showed only slight variations. The ratio of pepsin to rennin was not constant.

In the examinations made soon after operation the stomach was found to contain a surprisingly large amount of greenish material of the consistency of pea soup and with the strong odor of sour vomitus. Absence of retention was demonstrated by the roentgen ray but there was increased secretion due to stimulation from section of the Iopel's secretory fibers. This explains the relief experienced from careful introduction of the stomach tube a short time after operation.

The secretory conditions in the stomach undergo a gradual change in the first two months after operation and do not become stable until the end of that time. The early cases (within the first two months) showed a decrease in acidity but entire absence of free hydrochloric acid in the fasting stomach was found in only six cases. In the five others it was present but showed distinct decreases at later examinations. In the test meal on the other hand free hydrochloric acid was absent in every instance. The total acidity of the test meal was at first lower than that of juice from the fasting stomach but later this relation seemed to be reversed.

The same findings were made with regard to the ferments. In the early cases there was often as much pepsin as before operation but the late cases had less and frequently none at all. The findings with regard to rennin were similar but not entirely parallel. Examination of the duodenal juice revealed no injury to the pancreatic secretion from deficiency of hydrochloric acid. On the contrary it was found that when the protein digestion was imperfect in the stomach the pancreas functioned at least normally and in many cases its secretion was particularly rich in ferments.

As it is recognized that the duodenal sound is an entirely inadequate and unphysiological stimulant

of the pancreas the authors gave a test meal with the sound in position but the investigations carried on in this manner have not yet proceeded far enough to warrant conclusions. The authors agree with Schoppe and Deloch that hypo-acidity and anacidity of the stomach set up compensatory hypersecretion and hyperchylia. A short time after operation the hydrochloric acid content of the stomach is considerably decreased while the pepsin and rennin contents are relatively high particularly after a test meal. Conditions are satisfactory for pepsin activity but for rennin activity they must be improved. To induce rennin activity the authors give 15 c.c. of a 10 per cent solution of calcium chloride in 1 liter of milk. The milk becomes curdled within a short time even in the resected stomach.

The theory that gastric secretion is regulated by reflexes from the antrum is supported by the fact that increased activity of the juice and abundant secretion of fluid are set up by stimulation of the centripetal nerves by operative trauma and healing processes. When food is taken into the stomach and the impulse previously active is absent the secretions become diluted and less effective. In the cases studied the pancreatic juice showed an increase in strength after resection of the stomach. On no occasion was pancreatic function found to be injured. The influence of section of the vagus nerve on the organs peripheral to the point of section was not determined. ZIRPEA (Z)

**Inoue II. The Effect of Drugs on the Circular and Longitudinal Musculature in On and the Same Specimen of the Excised Small Intestine of the Rabbit (Ueber die Wirkung der Pharmaka auf Ring- und Längsmuskulatur des geschnittenen Kaninchendarmes bei verschiedenen Präparaten).** *Acta chirurgica medica japonica* 9:339.

In a previous report the author described his method by which contractions of the circular and longitudinal muscle layers of one and the same specimen of the small bowel of the dog could be registered graphically at the same time. In this article he reports the action of various drugs on the two muscle layers. It is known that many drugs stimulate the uterine musculature and paralyze the muscle of the bowel but the cause of this contrary action has not been satisfactorily explained.

In the author's experiments quinine and santonium were found always to paralyze the longitudinal muscle but first they temporarily stimulated the circular muscle and then depressed it. The initial stimulation of the longitudinal muscle may be overlooked because of the relatively poor development of this layer. Antifebrin depresses both layers but the longitudinal layer is more readily affected by it. Adrenalin through sympathetic stimulation very markedly depresses the longitudinal muscle but has little if any effect on the circular muscle. Cocaine acts directly on muscle exerting a weak stimulating action and a stronger depressing action on the

mobility and tonus of the small bowel. The circular muscle is always stimulated and by its contraction may cause a passive lengthening of the weaker longitudinal fibers.

The effects of atropine are difficult to evaluate as this drug apparently exerts a double action. Through the sympathetic nerve endings a depression of the longitudinal muscle is produced but the direct action of atropine causes a stimulation of the circular muscle fibers. Nicotine acts simultaneously on both muscle layers producing an initial paralysis followed by stimulation. Apparently it stimulates both sympathetic and parasympathetic motor endings. Atropine also affects both muscle layers simultaneously causing an immediate paralysis. Sometimes this paralysis is followed by a stimulation particularly if a small dose of atropine was applied. The depressing action occurs apparently through the vagus fibers and the Auerbach plexus and the stimulative action through the Auerbach plexus or the muscle itself. L. M. ZIMMERMAN, M.D.

**Hughson W. and Scarff J. E. The Influence of Intravenous Sodium Chloride on Intestinal Absorption and Peristalsis.** *British Journal of Surgery* 19:4, 197.

In clinical and experimental cases of intestinal obstruction Haden and Orr noted a striking fall in the blood chlorides. They were able to alleviate the toxic symptoms markedly by replacing the chlorides by the administration of hypertonic solutions of sodium chloride by hypodermoclysis or intravenous injection.

It appeared to the authors that the use of sodium chloride in cases of high intestinal obstruction in addition to the replacement of the chlorides and the reduction of the toxæmia might have a beneficial effect on the obstructed loop. Observations were made on twenty cats. The results were very uniform. A loop of small intestine just below the level of the bile ducts 18 cm. in length was divided at its upper and lower ends and connected with a reservoir filled with warm water. A 30 per cent hypertonic salt solution was then injected intravenously very slowly. As soon as the injection was begun the entire intestinal tract including the isolated loop showed marked peristaltic activity. This persisted throughout the entire period of observation in some experiments as long as fifty-five minutes.

In one experiment normal salt solution produced the same effect but with less intensity and only after a latent period. Dextrose in 25 per cent solution was also effective after a latent period. Distilled water and Locke's solution had no effect whatever. Clinical application of the method in two cases had striking results immediately and prolonged peristalsis following the injection of the salt solution.

The authors state that hypertonic sodium chloride solution can be given safely by the intravenous route in strengths of 15 to 30 per cent. Its effect has been demonstrated previously by the reduction

of the cerebro spinal fluid pressure. The injection must be made slowly not faster than at the rate of 5 cc per minute. JOHN W. NEZGAR, M.D.

**Delagenière H.** A Case of Intestinal Occlusion Through the Foramen of Winslow (Catonbu: *À l'étude de l'occlusion intestinale par l'hiatus de Winslow*). *Bulletin de la Société nationale de chirurgie* 1941: 552.

In 1906 Jeanbrau and Riche collected eighteen cases of intestinal occlusion through the foramen of Winslow. Ulmann recently reported another. In ten of the thirty-one cases the condition was found at autopsy and in the twenty-one others at operation. It is probable that this type of occlusion occurs more frequently than is generally believed and that it would be discovered oftener if operation were more frequently performed at the first signs of intestinal occlusion.

Delagenière reports a case which he operated upon in 1910. The preoperative diagnosis was high occlusus. The strangulation occurred 60 cm. from the duodenum and at the end of an hour caused vomiting. There was entire obstruction of stools and flatus. Examination revealed a globular tumor in the epigastrium slightly to the right of the median line.

Of the thirty-one reported cases twenty-one were operated upon and in these there were thirteen deaths and eight recoveries.

Recovery resulted in none of the cases in which an artificial anus was formed. Other surgical procedures such as simple reduction by traction, reduction after progressive dilatation of the lumen with the finger and retrograde taxis alter opening of the mesocolon have been successful.

Delagenière opened the posterior abdominal cavity widely and separated the colon from the omentum. He regards this as the method of choice when reduction cannot be obtained by simple traction on the herniated loops. It permits complete and rapid exploration of the cavity and of the loop and in case the loop is greatly distended allows its evacuation by puncture or temporary enterostomy. In addition it facilitates traction from the other side of the obstruction and exposes the strangulating agent to view so that the retractor can be effected and under the most favorable circumstances.

In order to prevent the recurrence of strangulation in the foramen of Winslow, an abdominal omentopexy of the hepatic flexure should be done and the reflected omentum fixed to the transverse colon.

In cases like the author's in which the occlusion is near the duodenum the complications arising from intestinal toxæmia are especially to be feared. Although the author's patient made a good operative recovery, he succumbed eight days later to pneumonia undoubtedly to intestinal toxæmia. To avoid this complication, the necessity to enlarge the stomach to admit a mild purgative daily and to keep the mouth and teeth in good condition. Delagenière has found that special attention has been paid to these points in his cases of gastro-

intestinal operations postoperative pneumonia which used to be attributed to chloroform or ether has almost disappeared. W. A. BRENNAN.

**Bedarida N. V.** A Duodenal Loop Excluded by Unilateral Resection. Anatomopathological Experimental Research (An a duodenale exclusio per seione unilateralis resectione sp. rme. talis anatomopatologica). *P.I.I.* Rome 1924: xlii.

The author performed gastric juxtapyloric and duodenal resections in dogs previously subjected to gastroenterostomy. Some were killed two months later and others at the end of about a year. One series consisted of dogs with a posterior gastroenterostomy and an antepyloric gastric resection which left the pyloric sphincter intact and *in situ*. A second series comprised dogs subjected to unilateral exclusion of the duodenum and downward resection of the pylorus with care to prevent injury to the nerves or the coronary gastric system.

In the experiments of short duration (eighteen days) both the distal and proximal tracts of the duodenum presented signs of involution and inflammation.

In experiments of longer duration (from one to two months) there was a marked difference between the segments distal and proximal to the neostomy. In the first the mucosa showed degenerative and inflammatory phenomena capable of bringing about its partial or total destruction. In the second, most of the glandular tubuli were maintained intact and in spite of vacuolation and fatty degeneration the cells were protoplasmic. The muscularis was aplastic and thickened and the lamina submucosa showed beginning fibrosis.

In the experiments of more than a year's duration the histological pictures were more normal. In the distal segment glandular atrophy and active cellular systems were found. The proximal segment showed regeneration with adaptation to its new position and biological conditions.

The conditions in the unilaterally excluded duodenal loop were therefore: (1) stasis of digested reflux material and partial retention of secretions; (2) an acute catarrhal process; (3) mucus and toxic secretions; and (4) absorption of the contents of the loop. These explain some of the general postoperative disturbances occurring in patients subjected to resection of the pylorus or duodenum. The syndrome includes general depression, a weak pulse, hypotension, hiccough, intestinal stasis and fever. Some of these symptoms may be due to the absorption of toxins. As the excluded loop returns to normal the gradually disappear.

W. A. BRENNAN.

**Wiles W. L.** Congenital Fixation of the Duodenum by Hepatoduodenal Membranes (Harris Bands). *Medicine* 1941: 9.

Wiles reports four cases of congenital fixation of the duodenum by hepatoduodenal membranes.

This condition is a frequent cause of indigestion and is often overlooked by both roentgenologists and surgeons. Careful fluoroscopic examination establishes the diagnosis. The X-ray reveals a J-shaped type of stomach with protrusion of the pyloric end of the greater curvature. The pylorus is more to the right and higher than normal, often it is at the level of the first or second lumbar vertebra. The duodenal cap usually fills slowly because of spasm and is often larger than normal. Frequently the first portion of the duodenum is dilated. The hepatic flexure of the duodenum—the juncture between the second and third portions—is very high lying close to the liver. It has no lateral mobility and shows no up and down movement except with respiration. There is always some obstruction at the point of fixation but it is light compared with the resulting symptoms. The stomach usually empties on time (gastric dilatation is rare). The peristaltic tone is good and hypermotility is noted. The condition is more common in females than males and occurs most frequently in the third decade.

If symptoms have been present for many years the picture is that of neurasthenia; the patient complains of fatigue, nervousness, palpitation and tachycardia frequently of headache and occasional all of migraine, insomnia and mental depression.

From one half to one hour after meals the patient has a sensation of tight fullness or oppression in the epigastrium which usually is relieved by belching. There is no distress when the stomach is empty. In most cases the condition causes occasional pain (omitting heartburn and pyrosis). There is little loss of weight. Constipation is usual and becomes progressively worse from chills and occasionally there are attacks of diarrhoea at intervals. The stools and gastric contents show no characteristic changes.

Operation gives very satisfactory results. The pain is relieved, digestion becomes much better and the general health including the nervous state improves. Middle-aged nervous asthenics respond very well and seldom require postoperative therapy.

In most cases the duodenal fistula is latent and the results of medical treatment are most satisfactory. Non-operative treatment consists in giving a non-irritating small regular diet in milligram quantities at frequent intervals with use of cathartics and anti-spasmodics such as belladonna. Lumbar Rest after meals and hot moist applications to the abdomen have been found helpful. Operation should be reserved for patients who do not respond to medical treatment and who otherwise suffer rapidly under the average conditions of useful life.

Philip J. Mearns, M.D.

W. Insteln, S. Roentgen Examination of the Descending Portion of the Duodenum (L. Roentgen, U.S. Hu. G. D. P. S. Des. D. O. Dem.) *For. Ch. & R. Ig. II* 94

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In a number of cases the following picture of the duodenum shows a third loop picture a

band to the right. The author reports five cases in which the finding was explained by the discovery of bands or adhesions at that site. In four control cases without a lateral bend in the fluoroscopic picture (three cases of cholelithiasis and one case of hypertrophic cirrhosis of the liver) no adhesions were found in the gall bladder or duodenal region at operation.

The bands may be the result of an active or healed inflammatory process (usually cholecystitis) or a non-inflammatory anomaly of development. In the latter case the kink is without clinical importance. To determine the presence of a lateral kink pressure is made on the stomach while the abdomen is drawn in. The contrast emulsion must be thin or it may be thinned with normal alimentary canal by giving the patient cold water to drink. Roentgenograms do not show the kink, all as evidence from two illustrations in the article. Hirtz (Z).

Melchior, L. The Surgical Pathology of the Duodenum. *M. gaduodenum* (B. Ir. Ig. U. H. G. H. D. I. L. Th. Ig. Du. M. G. D. O. D. Am.) *I. H. F. K. N. Ch.* 94 95 11

Acute dilatation of the duodenum may occur without noticeable mechanical obstruction of the lumen. Cases of this type of idiopathic dilatation have been reported by a considerable number of surgeons; also several cases of duodenal dilatation perhaps congenital which is associated with inflammatory disease of the pancreas. Only a few recent reports discuss these dilatations as entities.

The author reports three cases characterized chiefly by absence of an apparent mechanical cause. The duodenum was affected in its third, Brierley regards the condition as a reflex dilatation caused by the lower portion of the intestine. In the author's opinion it is a congenital malformation.

According to Grigore the symptoms of megaduodenum are attack of vomiting attacks of pain in the right side of the abdomen, loss of weight, belching and frequently bulging of the epigastrium. The condition is revealed by the X-ray. In the author's opinion the syndrome is not a new so typical duodenal megaduodenum is not particularly to be mistaken with intermittent character of the clinical symptoms. In some cases however there may be no symptoms. If the motility of the intestine is impaired from a cleavage of the jejunum is indicated. C. Z. Z.

R. B. St. R. M. A. N. te on External Duodenal Fistula with a Record of 5 Cases. Unpublished. *Ca. B. T. J. S. Ig. 94* 43

An external fistula is a much dreaded sequel to disease of the duodenum. The majority of duodenal fistulas are the direct result of operation for lesions of the duodenum, right kidney or gall bladder and bile ducts.

The accepted method that a duodenal fistula is an exceptionally grave lesion usually correct but

it is surprising to note how many such fistulae have healed up either under simple local treatment or as the result of some type of operation.

The treatment of a duodenal fistula depends upon the amount and character of the discharge and its effect upon the general condition. Operative treatment should not be considered at first unless urgent symptoms demand it.

Local treatment consists in protecting the skin. Suction of the fluid has been employed with good results. General treatment consists in withholding food by mouth as far as possible and the injection of saline and glucose by rectum.

In severe cases some form of operation is imperative. The choice rests between (1) gastroenterostomy with occlusion of the pylorus (2) jejunostomy (3) direct suture of the opening in the duodenum combined with (2) or (3) and (4) direct suture alone.

Gastro-enterostomy with occlusion of the pylorus was first suggested by Berg. The operation cuts off the discharge of the gastric contents into the duodenum and thus removes the stimulus which acts upon the flow of bile and the pancreatic secretion. It has the great advantage that within a few hours the patient can be given an adequate amount of fluid. Its chief disadvantage is that in the patient's already exhausted condition it may not be tolerated.

The operation of jejunostomy is an alternative method of introducing fluid has many merits. It can be performed rapidly under local anesthesia and if improved method of technique are used the danger of a permanent jejunal fistula is negligible.

The results of treatment by direct suture alone have not been encouraging. Mayo achieved a brilliant success in one case but the patient was done immediately after the discharge a notice and probably before the deleterious effect of the trophic fluid on the tissues was established. In all other reported cases the suture subsequently gave way.

If A D A M K K M D

Lehman E P and Gibson T V. Observation in a Case of Jejunal Fistula. *J Am M A* 1914 15: 98.

The authors report the case of a man who suffered a crushing injury of the jejunum. Total intestinal resection and the removal of the bowel brought out of the jejunum. The operative findings were as follows: The jejunum was found to be perforated at a point about 12 inches from the duodenum.

The first important in the observation was the time interval between the appearance of the first activity in the upper abdominal loop. The authors attempted to explain most partially as a result of the so-called gradient theory. The first factor in the minimization of the rate of the factors the case may be. In the case of the case was even evidence that the sum of the factors was carried across an anatomical high local point in the bowel to the lower loop. The authors concluded that the lower loop although not stimulated was

was applied to the latter loop. This can be explained only by a central control mechanism by which terms meant a mechanism co-ordinating the activity of separate segments of the bowel. No nervous impulse could have been transmitted without a time interval.

Another point of great interest in the case studied was the effect of sodium chloride secretion and peristalsis. The marked activity of both under the influence of a weak saline solution given by mouth was striking. Absence of a marked effect exerted by acid or alkali was noted. On one occasion when the salt was administered while the patient was nauseated there was a prompt flow of secretion with quick relief of the symptoms. This suggests a method of relieving the normal peristalsis in cases with a tendency to reverse peristalsis.

HOWARD A. MCKNIGHT M.D.

Lee W E and Downs T McK. The Treatment of Acute Mechanical Intestinal Obstruction by High Temporary Jejunostomy. *J Surg* 1914 15: 45.

The death rate of acute intestinal obstruction is high. The authors report a mortality of 75 per cent in the cases. Ashhurst in 1800 collected 346 cases with a mortality of 60.3 per cent. The records of St. Thomas Hospital, London, for the twenty years from 1880 to 1907 show a total of 343 cases with 319 deaths, a mortality of 58 per cent. Lenormant reports a mortality of 6 per cent in forty-three cases. In 604 cases reviewed by Guillaume the mortality was 15.5 per cent in those in which enterostomy alone was done, 48.2 per cent in those in which the operation consisted only in release of the obstruction, and 24.8 per cent in those in which it consisted in release of the obstruction and enterostomy.

They classified cases of acute intestinal obstruction into three groups on the basis of the duration of the symptoms.

1. Cases in which the symptoms have been present less than twenty-four hours and the general condition favorable. In these cases relief of obstruction is all that is required.

2. Cases in which the symptoms have been present for from one to three or four days. In these the general condition is usually favorable but there may be stercoraceous vomiting. The patient will usually stand relief of the obstruction but jejunostomy should always be done as a primary procedure.

3. Cases in which the mechanical obstruction has been present for longer than four days and the general condition is usually poor. In these cases primary operative interference should be limited to a rapid high jejunostomy.

Taylor also advised lavage of the intestine with sodium bicarbonate through the jejunostomy tube. The authors accept his classification and recommendations as to operation but do not regard routine intestinal lavage as necessary. The conclusions are as follows:

1 The cause of death in acute mechanical intestinal obstruction is toxæmia from the absorption of toxic intestinal contents

2 The indications for the surgical treatment of acute mechanical intestinal obstruction are in decreasing order of their importance: (1) elimination of the toxic material from the body as rapidly as possible (2) relief of the bowel from the tension which paralyzes it (3) restoration of the lumen of the intestines and re-establishment of the fecal current

3 Of the various methods suggested to meet these indications the most satisfactory is a high jejuno-stomy performed with a rubber tube after the technique of a Witzel gastrostomy

4 This procedure should be used alone or in combination with other procedures in all cases of acute mechanical intestinal obstruction of over twenty-four hours duration which are subjected to peritonæum

5 The stomal fistula with drainage of the rubber tube should be promptly when the need for it has passed

6 Full methiod when used as a temporary procedure will seven times allow an apparently hopeless case to improve to such an extent that more radical procedures may be attempted later when there will be some prospect of success

ST. MARY'S HOSPITAL, MICHIGAN

LEWIS, D. S. Syphilis of the Intestine. *M. J. C.* 4, 1921, 105

Syphilis of the intestinal tract attacks certain regions more frequently than others. Involvement of the mesophagus and small intestine is rare while the lesions are relatively common.

The infection may be congenital or acquired. In the former the lesions are usually in the ileum while in the latter the colon and rectum are more frequently involved. MacCallum, however, reports acquired tertiary lesions in the upper ileum and jejunum. Tuberculosis is usually found in the lower ileum and cæcum.

The secondary rash may affect the intestinal mucosa simultaneously with the manifestation in the mouth and skin. The symptoms are those of an acute catarrhal enteritis with mild abdominal pain and distention which respond to treatment quickly. The lesions usually seen, however, are those of the tertiary stage which appear as low elevations on the mucosa and a mucosa later breaking down into groups of ulcers which eventually the gut is on healing give rise to cicatrization and stenosis of the lumen.

Tuberculosis may easily be confused with a phyllophagous in both the ulcerative and sclerotic stages even on histologic examination.

The symptoms of intestinal enteritis vary with the type and location of the disease. In the early ulcerative stage there will be signs of chronic enteritis: pain, diarrhoea alternating with constipation and the presence of blood and mucus in the stools. In the

sclerotic and obstructive stages there will be signs of obstruction and if the lesion is in the lower bowel a malignant tumor of the rectum may be suggested by ribbon stools and tenesmus. Therefore it is not unknown.

In syphilis of the rectum which is much more common in the female than in the male the histology of proctoscopic examination is usually characteristic. The histologic lesions are the most important. The most characteristic feature of luetic lesions is the length of the affected area. The stricture is more rigid and inelastic than in carcinoma and the growth while ulcerating lacks the friability of a malignant neoplasm. The entire circumference of the rectum is involved instead of only one or two areas and the irregularity of the surface of the stricture is less noticeable in rectal lesions than in malignancy.

The lantern enema picture however is most typical there being a long small column of disorganized gradually into the unilateral hypertrophied colon above. This is a sharp contrast to the local and irregularities of the filling defect of carcinoma.

The large smooth lesions are not nodular and have none of the stony hardness which characterizes the organ involved with small metastases.

The author reports two cases one of a phyllophagous of the rectum with gumma formation and structure and the other a case of probable luetic obstruction of the small intestine complicated by tuberculous of the lungs with effusion. The roentgen findings in each case are shown in illustrations.

CLAYTON F. A. D. M. J. D.

MILLS, R. W. Roentgen Ray Examination of Colonic Lesions. *Secondry* 1921, 25. *Am. J. Roentgenol.* 1921, 5.

Super II W. T. Restoration of Colonic Function. *Am. J. Roentgenol.* 1921, 25.

Mills claims that in the form and topography and especially in the contractural reactions the abdominal viscera may give secondary evidence of minor primary conditions that would otherwise escape recognition. Taking the colon as an example he states that before the roentgenologist can diagnose the abnormality he must know the normal colon and the variability of its topography, form, length, its contractural reaction, motility and general relation to the body habitus. Every static peculiar anomaly in its position in the topography of the colon by determining the abdominal regional capacities, portions and distances of all individuals, the colonic peculiarities are influenced by the form proportions, dimensions and pressure of the other organs of the abdominal cavity.

Any acquired malposition in the rectum or pelvis, any tumor protruding out of the abdominal cavity, any maldevelopment of an organ or a considerable exudate will influence the colonic topography. Certain individual static and dynamic structural peculiarities may result in abnormal function which in turn cause changes in form. Any lesions within and outside the alimentary

tract and the products of lesions simulate certain secondary physiological colonic reactions and give roentgen ray evidence of their occurrence. Thus from the resulting atypical haustration and contractures local colonic diverticulosis may be anticipated when it is not immediately apparent.

It is possible that certain abnormalities in colonic function may in turn result in secondary mural changes in form. An example of this is the patulous rectosigmoid which is considered the result of division caused by fecal retention in the rectum with secondary dilatation of the contiguous colon. A redundant colon may owe its origin to a similar condition with stretching of the longitudinal bands. Colonic motility in common with general alimentary motility is increased in rate by the presence of a space occupying tumor outside of the alimentary tract. Possibly this is due to secondary stimulation of peristalsis plus an increase in intra colonic tension.

Knowledge regarding the normal physiology of alimentary motility may sometimes be gained from its perversions in certain pathologic conditions. For instance the fact that a carcinoma of the colon may be manifested by abnormalities in contractural and haustral outlines far distant from it both proximally and astonishingly far distal suggests that such atypical contractures represent a disturbed motor gradient—balked efforts at no mal contraction and haustration.

This article is illustrated with numerous roentgenograms.

Sower defines a normal colon as one that conforms to the anatomical type or bodily habitus of the individual is free from redundancies spasticity and local or general atony and contains a mucous membrane that is devoid of infectious and inflammatory processes.

Loss of function in the normal colon may occur under the following conditions: (1) neglect of or faulty defecation usually associated with the cathartic or enema habit; (2) perversions or inhibition of motility elsewhere such as chronic appendicitis, cholera, typhoid, hypothyroidism or hyperthyroidism, etc.; and (3) infectious inflammatory and ulcerative processes in the mucosa of the anatomically normal colon. Removal of the cause and dietetic and hygienic control in these cases are usually sufficient to restore normal function.

In cases of hypertonic colon ray foods laxatives and purgatives are contra-indicated and local treatment consisting of dilatation of the sphincter and dry powder insufflation should be given. Restoration of function in the atonic colon is usually effected by a general laxative diet free use of gas (a heaping tablespoonful with each meal) abdominal muscle exercises and intermittent gradual dilatation of the anal canal. Purgative and enemata are contra-indicated in the mild cases but may be necessary in the severe cases. In atonic conditions associated with pressure of the iliac colon and rectosigmoid magnesium sulphate solution should be

applied locally through the sigmoidoscope in addition. Certain cases with a redundant colon and those with a contracted descending and iliac colon and atony of the pelvic colon and rectum present difficult problems. In the latter water irrigation frequently gives relief. ADOLPH HARTUNG, M.D.

Gordon Watson, Sir C. Diverticulitis of the Pelvic Colon. *British Medical Journal*, 1924, xli, 112.

Diverticula of the pelvic colon occur where the circular blood vessels perforate the muscularis to reach the mucosa. These weak spots are located between the lateral taenia and the mesenteric border.

The three most important clinical conditions produced by inflammation in and around these acquired diverticula are: (1) perforation; (2) a subacute suppurative condition analogous to appendiceal abscess and distinguished from the latter by a tendency toward the formation of a fecal or vesicocolic fistula; and (3) hyperplasia characterized by tumor formation which closely simulates carcinoma.

Frequently diverticula give rise to no symptoms at all.

The subacute and chronic cases often simulate malignant stricture. Cases of diverticulitis usually have a long history of irregular bowel action associated with pain and tenderness in the left iliac fossa where a tumor may be felt. Absence of blood in the stools does not always exclude hyperplastic diverticulitis as blood was found in the feces in three of the author's cases of this type. In contrast to carcinoma there is very little loss of weight.

The diagnosis of diverticulitis is made largely from the findings of X-ray examination after an opaque meal or enema, but sometimes the opening of the diverticula may be seen with the sigmoidoscope. The clinical history, especially the maintenance of body weight and the palpation of a fair sized tumor in the left iliac fossa are suggestive.

Under the most favorable conditions resection with anastomosis is the ideal surgical procedure when there is some obstruction. Often however we must be content with a temporary colostomy in the hope that the inflammatory condition will subside. In the milder cases invagination of the dangerous appearing sacculi and overlapping of the involved area with omental grafts may be sufficient.

J. FRANK DOUGLASS, M.D.

Radice, L. Forty Seven Cases of Colon Surgery. (*Clinical Record of a 47 cases of surgery*, 1914, 94, 1, 384.)

The cases of colon surgery reported were studied in Nordmann's clinic in Berlin. The author's purpose was to determine the value of operations especially resections performed in one two or three stages.

Of the forty seven operations thirty seven were for cancer six for volvulus two for megacolon and two for ileocecal tuberculosis. Thirty two were radical resections and fifteen were palliative procedures.





2 In not all of the reported cases was the hæmaturia proved to be due to the appendicitis

3 An etiological relationship is possible

4 The pathogenesis of hæmaturia in appendicitis is not clear

5 In cases of hæmaturia of obscure origin appendicitis must be considered

6 In doubtful cases the appendix should be removed

BRACH (Z)

Hartmann H and Mocquot P The Results of Exteriorization in the Treatment of Cancer of the Pelvic and Left Colon (Résultats de l'extériorisation du cancer du côlon gauche et du côlon pelvien) *Bull et mem S* 1924 1 55

Olinczyk considers the exteriorization operation for cancer of the colon a dangerous procedure but Schwartz reported eight cases so treated in which there were eight recoveries Hartmann reports twenty seven cases with six deaths

Schwartz performs exteriorization in two stages (1) primary exteriorization and (2) late resection of the exteriorized loop Hartmann performs the operation in either one or two stages and doubts whether the time at which the resection is done is of importance in the mortality as Schwartz contends The six fatal cases treated by Hartmann were the following

CASE 1 Man 68 years of age with complete obstruction treated by a one stage operation for cancer of the pelvic colon Death three days later

CASE 2 Man aged 32 years Exteriorization immediately after resection of a pelvic cancer in aiding the bladder the pelvic wall the mesentery and the ureter and ligation of the inferior mesentery Death six days later

CASE 3 Woman aged 56 years Exteriorization and immediate resection of a cancer of the splenic colon invading the tail of the pancreas Death three days later

CASE 4 Man 74 years of age One stage operation for cancer of the descending colon Death at the end of one month from prostatic kidney and lung complications

CASE 5 Man aged 50 years with cancer of the transverse colon Death three days after exteriorization and entero anastomosis of the two limbs of the exteriorized loops to aid in the closure of an artificial anus

CASE 6 Woman aged 39 years Exteriorization followed by colectomy Death three months later from pulmonary complications

Hartmann reports also two deaths following the closure of fecal fistulae He considers Schwartz's method of closure less dangerous

Of the thirteen of Hartmann's patients who could be traced five are well and without recurrence two three three and three fourths four five and five years respectively after the operation two died without recurrence after six and six and one fourth years respectively one from heart disease and the

other from cerebral hæmorrhage another is apparently well one year after the removal of a local recurrence which developed ten months after the first operation two died from abdominal recurrence ten months and two years and one month respectively after operation one died at the end of six years from liver recurrence without local recurrence and one died at the end of eighteen months from metastases in the liver

In contrast to Schwartz and Quénu Mocquot emphasizes the advantage of exteriorization and resection in one stage in suitable cases He reports a cancer of the transverse colon which caused symptoms for two years and was successfully treated by exclusion of the tumor and mesentery from the peritoneal cavity and immediate resection of the tumor and its pedicle with partial suture of the two ends An insignificant fistula persisted temporarily after closure of the artificial anus seven months later The patient has remained free from recurrence for nearly four years

WALTER C BURKET M D

Mayo C H and Walters W The Two Stage Mikulicz Operation for Cancer of the Sigmoid *S & Gy C & Obst* 1924 XXXI 1

The authors discuss the comparative value of the various types of operation for carcinoma of the sigmoid with regard to operability mortality permanency of cure and morbidity

As a basis of comparison a report is given of 152 patients with cancer of the sigmoid operated on at the Mayo Clinic by the two stage operation of Mikulicz All but eight have been traced since the operation Fifty two are living and well with a normal functioning gastro intestinal tract and no evidence of recurrence Thirty seven lived for from two to seven years after the operation and in many instances death occurred from conditions not connected with the cancer of the sigmoid As the normal death rate of persons aged 52 years (the average age of the patients whose cases are reviewed) is 2 per cent a year the patients who have died cannot definitely be said to have died from a recurrence of the disease

The technique of the operation used at the Mayo Clinic and reported by W J Mayo in 1907 is described briefly

Kroll F The Results of Operations for Cancer of the Rectum at Our Clinic During the Last Ten Years with Particular Regard to Resections (Die Ergebnisse der Mastdarmkrebsoperationen an unserer Klinik während der letzten zehn Jahre unter besonderer Berücksichtigung der Resektionen) *Arch f Klin Ch* 1913 681

The disadvantage of resection is the danger of gangrene of the intestine which often cannot be avoided even when great care is taken to make proper provision for the blood vessels The sequel infection of the wound usually leads to a fatal peritonitis This occurs in one third of the cases In

another third in which the gangrene is confined to small areas, fistulae persist which rarely heal spontaneously and are seldom closed even by subsequent operation. The end result is a fecal fistula is more numerous than an artificial anus. Local recurrences may develop because in the attempt to spare the sphincter the operation is not carried sufficiently far into healthy tissue. Stenosis occurs following circular anastomosis as well as following the procedure in which the gut is drawn through a colostomy. A fecal fistula in the groin is less frequent. Infection of the wound occurs in 50 per cent of the cases.

Only carcinoma of the pericolic part of the rectum can be removed radically. In cases in which the carcinoma is high and in the sigmoid which it well advanced it cannot be removed radically enough by the sacral route alone because the corresponding area of lymphatic glands is intraperitoneal and can be extirpated only by means of a laparotomy. The results are better if the distal section of intestine and the corresponding lymphatic glands are removed radically by the abdominal routes without consideration for the test of the firmness of continence and an artificial anus is then formed.

The combined amputation was done in twenty three of the cases reviewed. This operation resembles the procedure of Quenu. With the patient in the Trendelenburg position a median incision is made, the rectum is separated, both hypogastric arteries are ligated and the tissue is separated from the mesocolon. The peritoneum of the pouch of Douglas is then opened and the intestine mobilized down to the level of the lesser sac. The tissue is divided in its lower third between two testicular clamps and without any further dissection. The central end is then inserted into the left iliac region, the distal stump is then inserted into the right peritoneum. A kink has been done, the removal of the well mobilized peripheral end of the intestine is undertaken. The method is that of Kraske with retention of the cecum on the right side. Laparotomy permits the removal of metastases in lymph nodes at a high level. The presence of internal, and particularly original, metastases should be determined before resection. Their recognition will present useful indications.

Of twenty three patients operated upon in one stage by the combined route, the amputation of the rectum, two had of pulmonary complications from seven to nine days after the operation one woman died after eight days from peritonitis due to necrosis of the suture stump of the flexor. Another died four weeks later of erysipelas and a third committed suicide during convalescence. In all of the other cases which occurred without interruption. In only one case that in which peritonitis developed was the death the direct result of the operation.

The procedure was usually borne surprisingly well. This is accounted for in large part by the fact that the amount of blood lost is small.

LEAH C. WERNER (2)

## LIVER GALL BLADDER PANCREAS AND SPLEEN

McMaster P. D. Studies on the Total Bilirubin. The Influence of Diet upon the Output of Cholesterol in the Bile. *J. Exper. Med.* 1924 31 25

The development of a method for the collection of total bile from dogs in a sterile state and uninfluenced by the gall bladder day after day for weeks has rendered possible an accurate study of the influence of diet upon the cholesterol output of the secretory organ.

The quantity and concentration of cholesterol in the bile are subject to profound modification by dietary influences. When a diet rich in cholesterol is given the amount of the substance in the bile is greatly increased and in almost every instance the concentration per cubic centimeter becomes greater. An increase in the total food intake resulting from the addition to the ordinary ration of a bone mash diet containing only a slight additional amount of cholesterol (500 mgm.) produces a similar though less marked increase. In the fasting dog the cholesterol yield is greatly cut down.

The increase in the cholesterol after the consumption of food rich in the substance does not depend on the cholagogue action of the latter though it is true that the concentration of cholesterol in the bile usually increases with the bile volume.

Though the quantity of cholesterol in the bile decreases during fasting its concentration per cubic centimeter is greatly increased. On an ordinary diet its yield fluctuates abruptly and considerably from day to day. In general the rule holds that an animal eating largely puts out not only a much more abundant amount of cholesterol, flow, but the relation between bile quantity and cholesterol yield is not fixed.

The cholesterol yield of the bile does not parallel that of bilirubin. The output of pigment from day to day remains relatively constant as compared with that of cholesterol. McMASTER AND KARY (3 D)

Flinhorn M. The Bilirubinosis of Gall Bladder Lesion. *Med. J.* 1924 9

A study of the bilirubinemia in all diseases of the biliary system and pancreas as it will often be of the greatest assistance. This is particularly true in cases where the clinical and typical diagnostic features.

The examination must be performed with great caution. The duodenal tube must be clean and asptic and the bile fresh. Normal bile is a golden yellow and clear, but pathological bile is always more or less turbid and varies in color.

The sediment should be examined for crystals, pus bacteria and epithelial cells. Six varieties of forms of crystals are found, including conglomerations of crystals and black sand like particles. The latter Flinhorn believes are always indicative of gall bladder pathology.

The reports of three cases are given to demonstrate the diagnostic value of bile examinations and microscopic fields of the sediment are shown in numerous illustrations OSCAR S PROCTOR MD

Ransohoff J L. Cholecystitis Associated with Cardiovascular Disease *Chicag Med Rec* 924  
217 225

Ransohoff divides cases of associated gall tract and cardiovascular pathology into three groups: (1) cases of gall bladder dyspepsia simulating cardiac disease; (2) cases of gall bladder disease associated with valvular cardiac disease; and (3) cases of myocardial degeneration due to or associated with infection of the gall bladder.

The cardiac symptoms in cases belonging to the first class are probably due to vagal irritation and will disappear after correction of the diaphragmatic pathology. In cases of the second group a fully compensated heart with a valvular lesion does not contraindicate a needed gall bladder operation but when the heart is decompensated the severity of the gall bladder condition determines the necessity for operative treatment. If there is interference with needed rest and if toxic absorption from the gall bladder is damaging the myocardium further and preventing compensation surgery becomes necessary. It is indicated also when the cardiac condition is myocardial without valvular disease and the gall bladder condition hampers recovery. The operation must be the simplest that will relieve the immediate lesions. The more severe the gall bladder pathology the more marked will be the beneficial results of operation. M L MASO MD

Koerte W. Changes in the Field of Gall Stone Surgery (Waldgundem, Gebel, Galle, Hirsh, Zentgraf, Ch) 941  
86

At the forty-seventh meeting of the Deutsche Gesellschaft für Chirurgie Aschoff, Enderlen and Holtz and the surgeons who discussed their papers expressed views on the subject of gall stone surgery which differ in many points from those heretofore held by most surgeons specializing in this field. The author was somewhat reluctant to express his opinion at the Congress but now comes forward to state his views as one of the older men in the field.

As regards the formation of the stones, Koerte still agrees with Naunyn that stasis of the bile and infection are the usual preliminary conditions. It is of course necessary to assume that the infection at first runs a very slow course without distinct symptoms since the earliest formation of gall stones is unaccompanied by noticeable disturbances. Recent studies have shown that changes in the chemistry of the stomach are present in cases of cholelithiasis before operation and usually persist after operation. Such changes may usher in the early symptomless infection.

In general it is probable that gall stones form very slowly and that they may remain in the gall

bladder for very long periods sometimes during the remainder of life without producing symptoms. The nervous spasms of the sphincter of the duodenal papilla (Rost, Westphal and others) and of the outlet of the gall bladder are important. The author claims that he has never seen stasis of bile in the gall bladder in the absence of occlusion by a stone and in the absence of infection. He agrees with Aschoff that Berg's theory of dysfunction of the bile passages (mucosa is cholestasis) has not been proved.

Koerte next discusses the indications for operation. Enderlen and Holtz advise early operation for the young and careful selection of cases for operative treatment when the patients are advanced in years. The author has frequently come across former patients to whom he had recommended expectant treatment because the indications for surgery were not conclusive and has found that they had suffered no great inconvenience without operation. Against early operation for all cases, Koerte argues that even when operation is done at the most favorable age by the most skillful hands and in an interval between attacks it has a mortality of 4 per cent. The elder Koenig and Kehr used conservative measures. The uncertainty of early diagnosis is another factor against early operation. In cases of symptoms of stone without inflammation the author is guided by the nature of the symptoms. When they are severe recur frequently and are followed by jaundice he advises prompt operation. In lighter cases a certain amount of delay is justified but the patient must be kept under observation. The social indication must always be considered.

The author does not regard this form of management as neglectful as he has seen only good results from it. He sums up his standpoint as follows:

Acute dangerous symptoms constitute an absolute indication for early operation. In moderate non-inflammatory attacks a certain amount of waiting is allowable. With regard to operation the surgeon should be guided by the degree of severity of the symptoms (relative indication). There must be no delay from neglect. The prognosis is most favorable in the young. In the cases of older persons it depends upon the general condition.

Koerte favors drainage of the hepatic and common ducts. He regards all physiological incisions of the abdominal wall as good but recommends also the unphysiological oblique incisions through the rectus muscle which gave a good approach and a good scar. The discussion on primary closure of the abdomen he considers to be ended. If one is wise one drains for a short time. Kehr's gauze tamponade is no longer in general use. GLASS (Z)

Kirschner M. When Should Operation Be Performed in Cholelithiasis? (Wann soll man bei Gallengensteinen operieren?) *Zentralblatt für Chirurgie* 924 h 33

During recent years the indications for the surgical treatment of cholelithiasis have been constantly



function and size for one year since the operation. It is too early to know the end results, but Grégoire also recommends this method in similar cases. The treatment of mega oesophagus by other procedures has not given very encouraging results. In one case treated by Prat by the transpleural route death resulted from pleural complications, and in another treated by him by the abdominal route the dilatation recurred after two years.

WALTER C. BURKET, M.D.

**Key E.** A Case of Diaphragmatic Hernia Complicated by a Perforating Gastric Ulcer (F. II on Herni diaphragmatic kompliziert mit perforiertem Magengeschwür). *Z. trakt. f. Chir.* 9:41, 1935.

A man 30 years of age suffered for more than ten years with gastric ulcers causing frequent severe hemorrhages. Roentgenological examination revealed a diaphragmatic hernia on the left side and a niche suggesting a perforated ulcer in the portion

of the stomach lying within the diaphragmatic hernia.

Under anaesthesia induced with a 22 F catheter operation was performed by the transpleural route with removal of a section of the eighth and ninth ribs. The separation of the firmly adherent lung from the diaphragm was difficult. A hernial opening four fingerbreadths wide was found at the highest portion of the diaphragmatic dome. The stomach was firmly adherent to the diaphragm and the lower surface of the lung. At one point in the edge of the hernial aperture where the adhesion was particularly strong a perforating ulcer was found. The stomach was opened at the site of the ulcer, detached, sutured, dropped back into the abdomen, the ulcer was cauterized and the opening in the diaphragm closed. The wound was sutured around a Mikulicz tampon introduced to the base of the ulcer.

The operation was followed by primary healing and recovery.

VON TAPPEINER (Z.)

# GYNECOLOGY

## UTERUS

Schlink H H: Chronic Diseases of the Cervix Uteri with Indication for Endocervical Fnu- cleation and a New Instrument for Its Per- formace. *Ibid J A* 1923 15

For the removal of the gland bearing area of the cervix the portion which usually becomes infected most easily and is most difficult to clear up the author has devised an excelsior. The instrument consists of a retractor staff armed at its tip with three small concealed tenacula blades and a circular knife with a blade attached to a sheath fitted over the staff at a joint in from the tenacula. By circular rotation the knife can be made to slip over the director.

The staff with the tenacula concealed is introduced into the cervical canal to its fullest extent the tenacula blades then being extended by a screw at the handle end. In this manner the staff is fixed in the cervical tissue and the cervical knife can be rotated through the cervix. The knife will cut out a slice in column of mucosa and cervical tissue to a circular depth of 3/8 in. This ensures the removal of all of the mucosa and a thin strip of musculature. The hemorrhage is only slight and the knife can do no injury to the bladder or vagina. The instrument is of value in excising from above and in a supra vaginal hysterectomy has been perfected.

HARRIS E M D

Stropen L: Uterine Fibromyomata and Ovarian Cyst Which Have Become Detached from Their Point of Origin and Are Nourished by Adhesions to Nearby Organs (Examination of a Case of arihe diatrophic filar adhesion nutritive adhesion). *Aust J Gynecol* 1923 47

The author reports two cases of uterine fibromyomata and two of ovarian cysts.

CASE 1. The patient was an unmarried woman 40 years of age who complained of gradual enlargement of the abdomen due to a palpable tumor. The pre-operative diagnosis mainly external abdominal and rectal examination was solid tumor of the right ovary with fibroid uterus.

At operation the omentum was found pulled to the right and adherent to a tumor the size of a fetal head. The neoplasm was of a fleshy firm structure pink and without any evidence of necrosis. The uterus presented several small subserous fibroids similar in appearance to the growth removed.

CASE 2. The patient an unmarried woman 41 years of age consulted the author because of abdominal enlargement and a palpable movable

tumor. The pre-operative diagnosis was large subserous fibroid or ovarian cystadenoma.

Operation disclosed a smooth pink tumor the size of an adult head which was adherent to its upper pole to the omentum and below to the posterior aspect of the left broad ligament and the left leaf of the mesometrium. The fairly normal uterus presented on its posterior aspect a whitish castrated area the size of a lime whence issued a drop or two of blood. The extremely short pedicle presented no sign of torsion was reduced to a castrated mass lacking circulation and certainly incapable of nourishing the large growth. On section the tumor was found to be 20 cm thick and to contain a large central cavity full of blood fluid. The microscopic diagnosis was solid tumor with central necrosis.

CASE 3 was that of a 25 year-old para v who had not been treated for two months and believed herself pregnant. Toward the end of the third month she was seized with symptoms suggesting rupture due to an ectopic pregnancy. In a few days her condition improved but the previously palpated mass in the left iliac region persisted and a surgeon called in consultation made a tentative diagnosis of rupture of ovarian cyst.

Operation disclosed a cyst the size of an adult head which was strongly adherent to the omentum and intestines. A short pedicle twisted several times was found completely torn from its attachment. The tumor was highly indurated and by the adhering structures chiefly the omentum. The left ovary was absent. The right ovary was greatly enlarged and cystic. The uterus and tubes were normal. The cyst removed was unilocular and had a thin wall preventing large areas of echymoses.

CASE 4. The patient was a null para 24 years of age. A menorrhagia in June 1922 was followed by profuse uterine hemorrhage with diffuse pain in the lower part of the abdomen which radiated to the back. As these pains increased in intensity a right salpingo-oophorectomy was done. Menstruation returned a December but soon became irregular and a menorrhagia supervened. A diagnosis of left salpingo-oophoritis and hemorrhagic endometritis was then made. Laparotomy performed in April 1923 disclosed a cyst the size of a fist which was adherent to the mesometrium. There was no trace of any connection between the cyst and the genital organs. The cyst was found to be of the ordinary multilocular variety without any remains of ovarian tissue.

The author goes into a detailed discussion of the etiology and pathogenesis of these cysts and supplements his article with an excellent bibliography.

SATCHEL P L M D

Lockyer C. Remarks on the Treatment of Fibroids of the Uterus *Brit Med J* 1914 1: 37

The clear indications for myomectomy are (1) to preserve for the non gravid woman a functional uterus (2) to cope with a surgical emergency during pregnancy. Lockyer has performed abdominal myomectomy thirty three times with one death. He believes that myomectomy is well tolerated by the gravid uterus and that during pregnancy it is not indicated for fibroids which lie well up in the abdomen and are causing no symptoms. When the bleeding is severe it may be impossible to save the gravid uterus.

In considering supravaginal amputation or subtotal hysterectomy he states that if subsequent to bearing a child a woman requires radical treatment for a fibroid of the uterus the cervix should be removed. Removal of the cervix is indicated also in the case of a nullipara with chronic cervicitis. However very many subjects of uterine fibroids are elderly nulliparae and virgins with small and possibly atrophic cervixes and no internal complications requiring vaginal drainage. In such cases the vaginal cervix may be left. When the cervix is densely adherent an attempt to remove it with the tumor would be dangerous.

In 479 abdominal hysterectomies for uterine fibroid Lockyer performed the supravaginal operation 284 times with five deaths a mortality of 1.76 per cent and total hysterectomy 195 times with three deaths a mortality of 1.54 per cent. Routine serial sections of 900 uteri removed showed that cancer coexisted in the stump in more than 2 per cent.

The author contends that there is no need to shorten the vagina in the total operation.

As regards morbidity he states that simple cases run as smooth a course after the total operation as after the subtotal operation but purulent case progress better with the vaginal drainage afforded by the total operation.

Even above the age of 40 years it is better to conserve one or both ovaries if they are healthy.

Complete haemostasis can be effected only by radiotherapy by a bloodless castration which is a disaster for a woman under 40 years of age.

The mortality of radiotherapy has been placed at 1.5 per cent. This is about that of hysterectomy but the risks are such that it is a greater responsibility to advise the use of radiotherapy in preference to radical operation.

The indications for radiotherapy are especially small tumors uncomplicated by degeneration or disease of the appendages cases in which the syndrome closely simulates that of the myopathic uterus (chronic metritis) causing postponement of the menopause with severe bleeding after the age of 40 years cases of uncomplicated fibroid requiring treatment but in which the general health contra-indicates operation and cases of profound secondary anaemia in which it may be used to improve the patient's condition sufficiently for radical operation.

Radium is preferable to the X ray being less destructive to ovarian tissue and exerting a more marked effect on the uterine muscle.

Uterine fibroid need no treatment whatever in 55 per cent of the cases. Removal is indicated in 35 per cent and radium treatment in 10 per cent.

ROBERT S. CROFT M.D.

Durante G. and Roulland H. A Malignant Embryonal Tumor of the Uterus. Myxochondroma (Tumeur embryonnaire maligne de l'utérus myxochondromique) *Gynecol* 1924 2: 1111

A very rare and interesting tumor of the uterus is reported. The patient a 52 year old woman who had been married twenty six years gave a history of two miscarriages and the normal delivery of a female child. The normal delivery was followed by a febrile puerperium which confined her to bed for six weeks. Three years before she was seen by the authors she suffered with menorrhagia. Later menstruation became irregular painful and more or less haemorrhagic. In February 1923 a curettage was performed but a month later the bleeding recurred and the flow was greater than ever.

When the patient was examined by the authors she had lost considerable weight and her pulse was 110. The abdomen was tender and distended and there was a fetid serosanguinous discharge from the vagina. Complaint was made of painful diarrhoea and nausea. Vaginal examination revealed a funnel shaped cavity at the end of the vagina from which there emanated a very fetid odor. At the base of the cavity was an irregular soft tumor. A diagnosis of neoplastic uterus with pentoneal reaction was made.

Operation performed May 22 1923 revealed an epiploic mass adherent to the uterus. On separation of this mass a blackish liquid escaped. The uterus which was the size of a fist presented on its middle and anterior surface an ovary from which protruded a mass of the same consistency as that palpated on vaginal examination. A total hysterectomy was performed. There was no enlargement of the lumbar glands. After a stormy convalescence the patient improved gradually and was discharged on the twenty eighth day.

Four months later her family physician wrote the authors that she had been seized with severe abdominal pains and presented on the right side of the abdominal scar a tumor about the size of an egg. When this was opened it proved to be of the same type as the growth that had been removed. Thereafter her condition became gradually worse and she died at the end of September.

The uterus was the size of a fist and presented nothing abnormal on its posterior surface. On its anterior surface its wall had been replaced by a budding friable mass in the center of which was an orifice communicating directly with the uterine cavity.

The neoplastic mass infiltrated into the myometrium branching from all sides. Its extension was



greater on the peritoneal surface than on the intra uterine surface. It was softer than the myometrium and of a darker color.

On microscopic examination the tumor was found to be formed of tissue closely resembling that of a very young embryo. In the middle of the stroma were small cartilaginous masses. The neoplasm expanded by sending out between the uterine bundles branches composed of a myxoid type of tissue. On the basis of the microscopic picture the authors came to the conclusion that the tumor was embryonal in type and very malignant.

The article is illustrated by numerous photographs. SALVATORE DI PALMA M.D.

Forsdike S. Cancer of the Cervix. *B. I. M. J.* 1924 11 94.

The author discusses the etiology of cancer drawing attention to the relationship of precancerous conditions such as erosions, fissures, lacerations, chronic cervicitis and bleeding cervix to lowered resistance due to malnutrition and infection.

He has not been able to correlate the type of malignant cell with the degree of malignancy. The diagnosis depends on digital examination, visual inspection and microscopic examination of removed tissue.

In cases of carcinoma clinically limited to the cervix the only treatment is operation.

When the lesion has invaded the pericervical tissues, radium treatment of the cervix and X-ray treatment of the pelvic tissues are indicated.

Salts of copper play an important though subsidiary part in treatment with radium.

In surgical cases, pre-operative and postoperative irradiation is of considerable value.

ROLAND S. CROW M.D.

Greenough R. B. The Treatment of Malignant Diseases with Radium and the X-Ray. I. Cancer of the Cervix. *S. G. Gy. & Obst.* 1924 22 118.

Of 829 women with cancer of the cervix, ninety-four were free from the disease three years or longer after treatment. More than half of these cures were obtained by the use of radium and the X-ray without radical operation. No cures were obtained with the cautery alone.

In 243 cases of early favorable and borderline cases, hysterectomy alone cured one in three, with an operative mortality of one in five. Radium with palliative operation (cautery) cured about one in three and radium alone or with palliative operation about one in five. Under these conditions it may be said that the choice between operation and radium in the treatment of early and favorable cases of cancer of the cervix is an open choice. It is to be borne in mind that the results of radium treatment with present-day technique are not yet known, but it is generally believed that they will be better than is indicated by the figures here presented.

In more advanced cases the cures obtained by radiation or by hysterectomy were very few.

In unsuccessfully treated early cases the duration of life is somewhat greater after radium than after operation. The formation of rectovaginal and vesicovaginal fistulae occurred with nearly equal frequency following all methods of treatment.

Radium with or without the X-ray or palliative operation was the most important agency in the destruction of local disease in cases which failed to obtain a cure. The value of radium as a palliative agent in advanced cases is beyond dispute.

In the treatment of recurrences following hysterectomy and in cancer of the cervical stump, radium therapy is to be preferred to other methods.

A dosage of radium sufficiently large for destruction of the local lesion is necessary.

In conclusion the author states that a uniform classification of the pathological varieties of cancer is desirable. CARL H. DAVIS M.D.

Schreiner B. F. and Kr. S. L. C. Untoward Results in Radiation Therapy of Uterine Cancer When Complicated with Latent Gonorrhea. *S. G. Gy. & Obst.* 1924 22 194.

This report is based on a study of 404 cases of cancer of the uterus treated by radiation at the New York State Institute for the Study of Malignant Disease. In five cases there was a severe peritonitis and in four it resulted in death. These five cases are reported briefly.

While chronic salpingitis complicating uterine cancer may sometimes cause a fatal peritonitis following radiation, the authors do not believe that all cases of gonococcal infection complicating cancer of the uterus will have such disastrous results. Intra-uterine manipulation may be a factor in lighting up old gonococcal infections, but in the cases reported was not the sole cause. Gonorrhea may be lighted up by external radiation alone in cancer cases. CARL H. DAVIS M.D.

Babcock W. W. Chemical Hysterectomy. *Am. J. Obst. & Gyn.* 1924 21 693.

For chemical hysterectomy the patient is prepared and placed in the position used for uterine dilatation. Local or general anesthesia may be employed. The cervix and internal os are dilated sufficiently for the introduction of a uterine packer. The cavity of the uterus is explored and scrapings and the discharge are removed for laboratory study. A uterine packer, preferably one with an obturator, is introduced with the internal os and the cavity of the cervix and uterus is thoroughly packed with a gauze tape impregnated with a saturated solution of chloride of zinc. During this procedure the vagina is protected by a strip of gauze impregnated with dry sodium bicarbonate that extends from behind the cervix out under the weighted vaginal retractor. The vagina is so packed with other strips of the soda impregnated gauze that the cervix and the caustic tape issuing from it are completely surrounded.

The packing including the caustic tape is with drawn at the end of twenty-two hours or less, de-

pending upon the amount of gauze used and the thickness of the uterine walls. If 15 mls or less of gauze are used the packing is removed in seventy-two hours; if 30 mls of gauze are used it is removed in eighteen hours; and if 60 mls are used it is removed in four and one-half hours. The duration of the application of caustic being equal to seventy-two hours divided by the square of the multiple of 15 mls of gauze. The time of the application is checked also by the thinness of the uterine walls. It should not exceed the number of hours represented by the thickness of the uterine walls in millimeters multiplied by two. When the uterine walls are only 3 mm thick the caustic should not be left in for more than six hours; when they are 6 mm thick it should not be left in for more than twelve hours; and when they are 1 cm thick it should not be left in for more than twenty hours.

The uterine slough will usually come away after about a week. The expulsion of the mass may be associated with uterine colic. While some of the author's patients have been permitted to be out of bed after the fourth day, it is wise to keep them in bed for one week and under supervision for nine days.

Chemical hysterectomy is presented as an additional measure for the removal of the essential parts of the uterus but must be used with care and good judgment. It has a somewhat limited field and will not supersede the use of radium in gynecology or the scalpel for hysterectomy. While it is obviously more dangerous than radium and therefore not even a competitor against it in the treatment of the simpler forms of uterine bleeding, it has the advantage of permanency of effect and the elimination of associated intra-uterine infection.

EDWARD L. CORNELL, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Chevrier L. Fumery J. and Dausse C. Results Obtained from Autovaccine Therapy in Utero Adnexal Affections (De quelq. c. étiats b. tenus grâce à la tova cinathé p. dans l'acte médy. des affect. ns utér. lles). Rev. f. c. déty. é. id. b. f. 924 ix 93.

Not satisfied with either medical or surgical treatment in many cases of inflammatory utero adnexal conditions on account of the associated prolonged morbidity or mutilation, the authors experimented with autogenous vaccine therapy as an adjuvant to the usual methods of treatment. The best results were obtained in recent acute infections. In chronic cases the isolation of the infecting organisms is rendered very difficult by the presence of secondary infections.

The material for the autovaccine was obtained from the cervix by means of a pipette, one end of which was bent at an angle of 140 degrees. The patient was placed in the lithotomy position, the parts were scrubbed and a vaginal douche of boiled water at body temperature and without any

added antiseptic was given. A sterile speculum was then introduced to expose the cervix. Dilatation of the cervix was seldom necessary. It is very important that no vaginal secretion be obtained. If there was no discharge the material for culture was obtained by means of a platinum needle introduced into the cervical cavity. From immediate examination of the material on a slide it was usually possible to determine whether the infection was due to a streptococcus or the gonococcus, but in all cases a medium that would grow both types of organisms was employed.

Vaccine therapy was first used by the authors in June 1922. All of the patients who received this treatment were given douches and enemas every morning and evening. In general they received one or two series of ten injections of 1 or 2 c.c. of the vaccine every other day. The fifty cases treated included salpingitis, salpingo-oophoritis, pelvic peritonitis, parametritis, and metritis. The sites of injection were on the abdomen above the iliac spine and on the thorax. The vaccine was injected very slowly. It was found to be contra-indicated in patients with tuberculosis and albuminuria. The local reaction was often painful and associated with inflammation but in eight cases there was no pain or local manifestation. In fifteen cases only pain was present. In seven cases the reaction was severe. Usually it occurred only after the first few injections. Pain was caused by all of the injections in only three cases.

In thirty cases there was a general reaction. Usually this followed the second, fourth, or eighth injection. It was manifested by a moderate fever (37.3 degrees C), chilly sensations, and malaise. In some cases it was marked. When a focal reaction was obtained the patient was usually relieved very quickly. This reaction consisted of a pricking sensation in the region of the adnexa, congestion of the uterus (an increase of metrorrhagia or the appearance of a bloody uterine discharge) and a change in the discharge from a very viscid stringy, greenish or yellowish fluid to a serous and clear fluid.

The appetite often returned soon after the beginning of the treatment and there was a gain in weight. In general the first injection was not followed by fever. After the second and third the temperature rose but after the fourth and fifth it slowly returned to normal. The sixth injection caused fever again and after the other injections the temperature oscillated for a while and finally dropped to normal.

The action of the vaccine on the functional disturbances was evidenced by arrest of the metrorrhagia and frequently by complete cessation of the feucorrhœa. If the feucorrhœa persisted it was very slight, serous and intermittent. After the fourth injection the pain became less severe and soon ceased. The fast effect was constant. The physical signs of the infection were improved in almost every case.

S. LIVATO E DI PALMA, M.D.

Schlink H H A Clinical Contribution on Internal and External Migration of the Ovary and the Importance of Excising the Intramural Portion of the Fallopian Tube in the Operation of Salpingectomy *Med J Aust* 1924 1 555

Internal migration of the ovum has been proved to take place in the sow. In tubal pregnancy in the human female the corpus luteum has been found in the ovary opposite the pregnant tube. Migration of the ovum in the human female can be demonstrated only under exceptional conditions. The author has clinical evidence of both internal and external wandering of the fertilized ovum and reports a case of external and internal migration occurring in the same woman.

Six weeks after a curettage for incomplete abortion the patient entered the hospital with pelvic inflammation. At laparotomy both tubes were found inflamed and the left was occluded. The right ovary was degenerated and cystic. A left salpingectomy was performed but the intramural portion of the tube was not removed. The right ovary was excised and the right tube left in situ.

Two years later the patient was admitted in a state of exsanguination and collapse with a history of sudden pain in the abdomen and fainting but no amenorrhoea. The abdomen was greatly distended and fluid was present in the pouch of Douglas. When the peritoneum was opened a large amount of fluid blood was evacuated. The uterus showed a large rent in the position of the cut-off stump of the left tube. No fetus was found. Because of the patient's desperate condition the abdomen was quickly closed. Recovery followed.

Four months later the abdomen was again opened the diseased and adherent right tube was removed and ventrofixation of the uterus was done.

The author believes that the ovum after escaping from its graafian follicle on the left side was carried across the back of the uterus by the currents set up by the muscular action of the fallopian tube and its fimbria on the right side became fertilized and then continued on its way to the uterine cavity and into the cul-de-sac of endometrial mucous membrane formed by the unremoved intramural portion of the left fallopian tube. There it continued to grow eroded through the less resisting mucous membrane of the tube and finally ruptured into the peritoneal cavity.

In conclusion Schlink states that this case emphasizes the importance of removing the intramural portion of the tube in salpingectomy.

HARRY W. FLEXNER, M.D.

Anspach B M The Preservation of the Ovary in Pelvic Surgery *Ann Surg* 1924 78 65

From a study of 170 cases operated upon the author draws the following conclusions:

Conservation of one ovary or of both is of great value in pelvic surgery. The condition of patients operated upon conservatively is vastly better than

that of patients who have been subjected to radical procedures. This is evident from the absence or postponement of menopausal symptoms, the infrequency of headache, abdominal pain and necessity for postoperative pelvic treatment and the patient's own estimate of her general well-being.

The surgeon's attitude should depend upon the age and social standing of the patient. In the young unmarried woman and in the sterile married woman who desires to bear children the ovaries must be conserved if this is possible. In the cases of older unmarried women the operator should be guided by the patient's desire for marriage and child-bearing and her nervous and mental equilibrium. In multiparae conservation of the uterus with the ovary or ovaries is less important but in each instance the final decision must depend upon the age, the social status and desire of the patient herself. After the age of 3 years the indication for conservatism rapidly becomes less definite although menopausal symptoms may supervene. The use of ovarian extract will tide the patient over a trying period and the balance will then be restored. The patient being free meanwhile from the physical suffering entailed by the presence of pathological lesions in the pelvis and their results.

Except in the very young and unmarried conservatism should not be practiced when it is probable that the organs allowed to remain will give rise to future trouble unless it is the expressed desire of the patient to run such a risk.

Conservation of the ovaries in hysterectomy for uterine myoma is more uniformly successful than their conservation in hysterectomy for pelvic inflammatory disease. Obviously this is due to the fact that the ovaries are healthy in a much larger percentage of the cases of myoma than in those of pelvic inflammation.

When possible the tube should always be conserved with the ovary.

Single graafian follicle or corpus luteum cysts of the ovary are more favorable cases for resection than are small or multiple cystic degenerations of the entire ovary. When it is important to conserve ovarian function and one ovary is entirely healthy and the other one is diseased, extirpation of the diseased organ is preferable to ovarian resection.

In cases of displacement of the uterus with pelvic adhesions in which both ovaries exhibit thickened capsules and multiple small cystic degenerations and conservatism seems desirable it is advisable to release adhesions and place the ovaries in a good position by the procedure not involving direct suture of the ovary itself. This is usually more successful than bilateral resection unless decided hyperthymia is present. In the latter case of course bilateral ovariectomy must be performed.

The unfavorable results of hysterosalpingo-oophorectomy are not always recognized by the patient in the form of hot or cold flashes. In some cases complaint may be made of nervous instability, irritability, loss of initiative and general asthenia.

without mention of the typical vasomotor disturbances.

Sexual desire is little affected by castration after it has been developed. Not infrequently the pathologic condition removed by operation even though complete castration is necessary relieves dyspareunia and makes coitus more acceptable to the woman than before.

The administration of the dried preparations of the entire ovary freshly prepared greatly ameliorates the symptoms of the artificial menopause. When bilateral oophorectomy is performed the administration of these products should be begun immediately and continued indefinitely.

When both ovaries have been removed or when in spite of conservation of one or both ovaries the removal of the uterine fundus or excision of the fallopian tubes has arrested the menstrual flow or made reproduction impossible care is necessary in advising the patient or her family regarding the nature of the operation.

If good judgment is used much can be done to save the pride of the wife and the faithfulness of the husband and the patient a mental complacency will not be left to the mercy of inquisitive and gossiping friends.

ROLAND S. CROFT, M.D.

Müller, C. J. An Ovarian Graft. A Case Report. *Obstet. & Gynecol.* 1914, 1: 4.

The patient a woman 3 years old first consulted the author in 1915. She had had typhoid at the age of 19 years, measles and mumps recently and malaria several times. Menstruation began in her seventeenth year and after the first year was fairly regular. She had always been nervous and had all ways suffered from dysmenorrhea with intense backache and headache. She had had one full term normal delivery which caused severe laceration and was followed by slight fever. Two years before she consulted the author she had an appendectomy and at the same operation the entire left ovary and a portion of the right ovary were removed because of multiple cysts and the laceration were repaired. The results of the repair of the lacerations were not good.

In April 1915 the uterus was curetted an extensive tear of the cervix repaired the right ovary removed and the uterus supported by the Montgomery technique. The remnant of ovary was mainly cystic and burned in adhesions and there were marked adhesions between the sigmoid and the stump of the left ovary. The latter was freed as small portions of the ovarian tissue appeared no malabout half of the remaining portion of the right ovary was tucked away in a dry sac behind the pinnucum and the left rectus muscle.

Menstruation was re-established about three months after the operation. The period was irregular frequently coming on a week or two ahead of time but the dysmenorrhea ceased entirely.

In July of 1917 the patient reported that about three months previously a small mass which was very

sensitive to pressure appeared about an inch to the left of the scar and was gradually enlarging. Coincident with its appearance practically continuous metrorrhagia began. Examination showed what was obviously a cystic condition of the ovarian graft and excision of the graft was advised.

The operation was entirely without incident. A small portion of the graft was apparently still normal but the lower end was cystic and contained about 3 oz of clear fluid. Microscopic study revealed an active corpus luteum. Within a few days after the operation the metrorrhagia ceased entirely and since then there has been no return of the flow.

CARL H. DAVIS, M.D.

## EXTERNAL GENITALIA

Fraenkel L. The Formation of a Vagina from Skin (Pudg. ex r. Hauts.heid.) *J. tal. f. Gyn.* 1921, 1: 11, 103.

As re-jection of the intestine for the formation of a vagina appeared to the author to be too serious an operation for the indications he sought to form a vagina from the external skin as this resembles the vagina in structure more closely than the mucous membrane of the rectum and the supply of it is plentiful. As in prolapse the mucous membrane of the vagina comes to resemble epidermis it appeared probable that in the depths of the pelvis the skin would become vaginalized. Moreover by this procedure a favorable preliminary conditions would be obtained for coitus since the corpuscles of the nerve endings of the skin show a structure exactly like that of the corpuscles of the genital nerves.

After separation of the bladder from the rectum Fraenkel carries a tube of skin attached by a broad base on the vulva through the pelvis and fixes it to the abdominal wall. He believes that because of its blood supply from above and below and its insertion in the pelvic connective tissue a vagina thus fashioned will survive.

A case in which this operation was performed was that of a healthy 20-year-old girl with well-developed secondary sexual characteristics normal vulva and an intact hymen with a crypt in the center the size of a lentil from which no passage extended inward. The patient was first placed in the dorsogluteal position and after excision of the hymen a cavity of the breadth and depth of a multiparous vagina was formed with blunt instruments between the bladder and the rectum and packed with iodoform gauze. This having been done the patient was placed in the Trendelenburg position and a transverse Pfannenstiel incision was made. Between the bladder and the rectum was then seen a transverse running cord about 5 cm. long and with a saddle-like indentation in the center which on the right and left sides increased in size to form the extremely connected horns of the uterus. The adnexa were normal.

After a transverse incision had been made over the vesico-uterine plica to the single müllerian cord

which continued downward the flapper was freed. The iodoform gauze was then removed and the layers of connective tissue were penetrated to the prepared cavity. In the next step the abdominal cavity was exposed, the patient was again placed in the dorsogluteal position and two rectangular flaps 17 cm long and 5 cm wide—one on each side—were freed from the lower portion of the iliohypogastric and the inner side of the thigh with their bases toward the introitus. These flaps were fully cut out sutures to form a tube. The end was closed and the tube invaginated in the tunnel closed on its remost.

With the aid of a forceps inserted from above the tip of the neovagina was then drawn into place. The silk retention sutures previously placed in the tip of the skin tube were carried laterally on the right and on the left through all the layers of the abdominal wall and tied over a small roll without tension. Complete penetration of the tube was into the abdominal wall secured in four layers. The thigh wounds were closed with interrupted silk sutures.

A few weeks later the second stage of the operation was performed. This consisted in dividing the flaps from their bases and suturing them carefully. A permanent catheter was then introduced into a

protective dressing applied. Fever was present for eighteen days. Healing occurred by secondary intention. A necrotic strip about 10 cm long and 2½ cm wide was extruded through the abdominal wall.

When the wounds were clear and the swelling of the vulva had gone down both flaps were found to be healed in the end of the vagina could not be palpated. Epithelization was complete and the introitus was sufficiently wide. Behind the introitus was a constriction through which the finger passed into a smooth tube of normal breadth. On the left labium majus was a ridge of tissue which will be removed later. The upper portion of the flap had become necrotic and came off because of displacement between length and breadth. Hence the anchoring to the anterior abdominal wall was not successful.

For future operations the author proposes (1) to implant the rudimentary uterus in the skin sheath (2) to remove the thigh flaps simultaneously with the limb in extension and adduction in order to obtain a better tendency toward healing and (3) possibly in some cases to take the flaps from the skin of the abdomen parallel with the longitudinal incision and carry them from above downward.

WILLIAMS (C)

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Teacher J H On the Implantation of the Human Ovum and the Early Development of the Trophoblast *J Obst & Gyn ac B 1 Emp*  
1924 xxii 165

The process by which the human ovum becomes enclosed within the decidua is still unknown. Hunter stated that the membrane to which he gave the name decidua was the endometrium modified to serve the needs of pregnancy but offered no theory to account for the formation of the decidua reflexa. The idea that the mammalian ovum attains its access to the stores of nutrition in the maternal circulation through the destruction of maternal tissue is based on many studies of human and comparative embryology. In a monograph published in 1899 Peters gathered together all the data that were then available.

The famous Peters ovum about 2 mm in diameter was already embedded in a little swelling of the decidua. A gap in the roof of the decidual cavity was closed by a mass of fibrin and blood clot. Peters theory that the human ovum implants itself in the decidua and that the gap over it is closed by a coagulum still prevails and seems to be borne out by the examination of other human ova.

The Teacher Bryce ovum described in 1908 and known as T B 1 showed only a very small circular aperture the lips of which were composed of decidual cells like the rest of the roof of the cavity and the aperture was occupied by a small mass of fibrin and leucocytes. It was held that this represented a true aperture of entrance for the ovum and that the wide gap and closing coagulum of the Peters ovum were secondary changes.

This article is a critical study of the original Teacher Bryce ovum and of a second ovum to be known as T B 2. The second ovum was found at autopsy at the Glasgow Royal Infirmary on June 17 1923. It was prepared in the usual manner and showed more clearly than any previously described specimen that there is no adhesion of the blastocyst to the roof of the decidual cavity at the aperture of entrance and that there is a filling of the aperture by an outgrowth of primitive ectoderm. This is a mechanism by which the fast entering parts of the ovum close the aperture through which it entered the decidua. For the closing plug the author suggests the name operculum deciduae.

The monograph is most excellently illustrated by ink and colored drawings.

The author's conclusions are the following:

1 The human ovum burrows into the endometrium like a vigorous parasite destroying maternal tissue

and provoking an inflammatory and reparative reaction.

2 The closure of the decidua capsularis (reflexa) is effected by an apparatus developed from the last entering cell of the ectoderm of the ovum. This becomes united with the uterine epithelium and later with the other tissue of the lips of the aperture of entrance. For it the term operculum deciduae is suggested.

3 The recognition of this apparatus had led to the discovery that in the human ovum there is a polar structure similar to that seen in the guinea pig and hedgehog. The ovum is therefore described as having an entering or implantation pole and an adhering or closing pole. This polarity determines the position of the embryonic rudiment in the blastocyst and the situation of the placenta. The operculum differs from the traeger of the rodent in taking no part in the formation of the placenta.

4 The operculum usually becomes detached from the blastocyst and degenerates when its function of closing the aperture of entrance and temporarily fixing the ovum have been fulfilled. When the separation occurs an internal shield of fibrin formed by thrombosis in the implantation cavity closes the aperture of entrance from within. In some cases the operculum remains attached to the blastocyst and an external closing coagulum (Genebspilz) may form over it.

5 The conception (1908) that there are two generations of trophoblast a primitive or implantation trophoblast and a secondary or attaching or placental trophoblast is found to be justified.

6 Much of the syncytial part of the primitive trophoblast disappears when its functions of forming the implantation cavity and opening the maternal vessels have been discharged.

7 The rest of it and the primitive cytotrophoblast develop into the placental trophoblast and in the first place are concerned with the attachment of the ovum and the formation of the intervillous space and proper channels between it and the maternal circulation. It becomes the chorionic epithelium.

8 The original Teacher Bryce ovum T B 1 found to demonstrate the relations of the maternal blood to the ovum prior to the formation of the intervillous space. The blood enters the implantation cavity as hemorrhages from minute vessels of the endometrium and leaves it by the large venous sinus which is so conspicuous an object underneath most human ova. This sinus must be regarded as a normal feature of the surroundings of the young human ovum. Abortion in the case of T B 1 appears to have been due to rupture of the sinus followed by thrombosis which arrested the circulation through the implantation cavity.

o In these early arrangements the human ovum exhibits fundamental differences from the ovum of any other species the early development of which is known

PALL R. HILL, CHRY. M.D.

Gessner, W. The Baden Eclampsia Statistics for 1921 in the Light of a Functional Treatment of Eclampsia (Die bayerische Eklampsia Statistik für das Jahr 1921 im Lichte der funktionellen Eklampsiabehandlung). *Zeitschrift für Geburtshilfe und Gynäkologie* 1922, 75.

The author reports the results of the statistics on eclampsia from Baden for 1920 to 1921. According to these the number of births in Baden has increased by only 1 per cent whereas the incidence of eclampsia has increased by 34 per cent. It is evident therefore that most of the obstetricians have not applied prophylactically the teachings of the hygienic experiments of the World War.

Gessner mentions the therapeutic value of prophylactic early delivery and artificial rupture of the membranes, and calls attention to the fact that Kollman recommended a venesection and reported good results from it before it was advocated by Engelmann and Zweifel.

In Gessner's opinion the favorable effect of chloroform anesthesia is due only to the reduction of the intra-abdominal pressure. As proof he cites the statistics of Meyer-Wies according to which the number of cases of eclampsia increases with the increase in the tension of the abdominal wall up to the eighth month and then again decrease. Even though anesthesia diminishes the tension of the abdominal wall Gessner advocates active treatment of eclampsia and favors Braxton Hicks' version. Metreury is to be avoided in order not to increase the danger of eclampsia by increasing the contents of the uterus. On the other hand Gessner mentions metreury when perforation of the membranes must be avoided.

The author believes that eclampsia is of mechanical origin. Active treatment by emptying of the uterus he calls the functional therapy of eclampsia because the normal circulation of the kidney and its function are safeguarded by the relief of the tension on the abdominal wall. The important point is not that eclampsia should be treated surgically but that surgical treatment should be given early. (Lacy.)

Croen, O. The Result of the Treatment of Eclampsia in the Obstetrical Division of the General Hospital in Malmoo (Resultat af Eklampsiebehandlingen i de Gængse Afdelinger i Malmoe). *Skandinavisk Tidsskrift for Lægevidenskab* 1922, 93, 22, 769.

In the clinic of which the author is the director the treatment of eclampsia during the last twelve years has been not entirely active nor entirely expectant. All undelivered women have been at once delivered but after delivery expectant methods of treatment have been used, namely isolation, the

free administration of narcotics and venesection. Venesection has been done twenty times but always in the puerperium and in cases in which the attacks continued. Lumbar puncture has been done sixteen times but while it had no injurious effects it was of no distinct benefit. Decapsulation of the kidney has been done twice but in both cases the woman died.

The author discusses only cases showing the typical convulsive attacks of eclampsia. In 1915 he collected seventy-nine cases with eleven deaths a mortality of 13.9 per cent. Since then he has treated 155 cases more with five deaths a mortality of 3.2 per cent. In all there were 133 cases with sixteen deaths a mortality of 12.8 per cent.

In the forty-five cases in which the eclampsia began during pregnancy there were six maternal deaths a mortality of 13.3 per cent. Of the forty-five children in these cases seventeen (37.7 per cent) died twenty-four, eight less than 2,000 gm.

In the twenty-eight cases of eclampsia occurring during the first stage of labor five of the mothers died a mortality of 25 per cent. Of the twenty-four children four (16.6 per cent) died.

In the cases in which the eclampsia began during the second stage of labor there was only one maternal death a mortality of 3.3 per cent and of the thirty-two children only three (9.3 per cent) died. Two of the children who died—one a marbled anencephalus—weighed less than 2,000 gm.

In the forty cases in which the eclampsia followed delivery (four 10.0 per cent) of the women died and of the forty-four children three (6.8 per cent) died. There were ten per cent of twins.

In the eleven cases of the first two groups which were fatal to the mother delivery was effected by abdominal caesarean section in six by vaginal section in one with the forceps in one and by version and extraction in one. The last three deliveries were effected after dilatation of the cervix. In all of these eleven cases the eclampsia was severe with numerous attacks and associated with anuria.

In the entire series of ninety-five cases of eclampsia appearing previous to delivery major operations were performed in forty-seven cases in seven with one death and one caesarean section in twenty-three with six deaths. The difficulty of such radical procedures is always difficult to determine especially in view of the good results obtained in some clinics by expectant treatment. Each case must be treated according to its particular requirements. The author admits that it may not be necessary to resort to caesarean section so often as he did up to last year. He now divides a middle course similar to that of Engelmann. This he outlines as follows:

Immediately after the onset of eclampsia the woman is isolated in a darkened room, venesection is done and morphine administered. The results of expectant treatment are then waited for. If the attacks subside and no further disturbing symptoms appear the patient is regarded as light and the

expectant treatment is continued. If the attacks do not subside and other severe eclamptic symptoms appear such as epistaxis and eye symptoms active treatment is instituted and the advisability of cesarean section is considered.

In the cases reviewed the uncorrected infant mortality (145 cases with twenty seven deaths) was 186 per cent and the corrected mortality (119 cases with nine deaths one macerated anencephalus and twenty five children weighing less than 2 000 gm) was 5 per cent. Five cases of eclampsia were complicated by premature separation of the placenta. In three cases the eclampsia was recurrent and in one of these was fatal.

The author discusses also the results of treatment during pre-eclamptic toxæmia the preliminary stage of eclampsia. As is well known Essen Moeller has advocated so called active prophylaxis by which he means the induction of labor by active intervention during the stage of toxæmia which precedes the eclampsia.

Groné does not share Essen Moeller's enthusiasm regarding active prophylaxis. In thirty nine of his cases of pre-eclamptic toxæmia there were four deaths. These occurred before an eclamptic attack but at autopsy the typical and very marked changes of eclampsia were found. Therefore pre-eclamptic toxæmia is not to be considered a relatively benign preliminary stage of eclampsia as might be assumed from Essen Moeller's report. It is a very serious condition which in the author's cases had practically the same mortality as eclampsia itself.

In Essen Moeller's cases there were three deaths but these strangely were reckoned with the deaths due to eclampsia. Of forty four children (five pairs of twins) twelve were born dead or died soon after birth three of the twelve weighed less than 2 000 gm and seven less than 1 000 gm. Essen Moeller's observation that with an increase in cases of pre-eclamptic toxæmia eclampsia decreased the author was unable to substantiate in his cases. On the contrary he noted a certain parallelism.

Groné designates as cases of pre-eclamptic toxæmia only those with albuminuria a high blood pressure headache vomiting pain in the epigastrium eye symptoms and general restlessness or a throbbing head.

The author mentions also cases in which eclampsia begins with a very acute onset and in which no prophylaxis is of value.

In a table is given a summary of all severe cases of toxæmia of pregnancy observed in the course of ten years. In 11 006 births there were eighty six cases of eclampsia thirty nine cases of pre-eclamptic toxæmia forty even cases of premature separation of the placenta and 644 nephropathic cases with more than 1 per cent of albumin in the urine. In the years of the war from 1917 to 1918 when food was rationed in Sweden there was a distinct decrease in the frequency of the toxæmic pregnancy.

## LABOR AND ITS COMPLICATIONS

Murray E F Cesarean Section *B H M J* 1924  
1 44

This article is based on 116 cesarean sections the majority of which were performed to anticipate or relieve obstruction of labor due to pelvic contraction and the others for less common indications. The operation was the classical cesarean section.

In the seventy five cases the ratio of posterior to anterior placenta was 4:3 but in patients who had had a previous section this ratio was 3:1. The risk of rupture of an old scar was found to be negligible.

A large number of the patients were undersized and rachitic and in the primiparae an abdominal examination alone was usually sufficient to reveal a contracted pelvis. In some cases an anæsthetic was given and an attempt made to determine whether the head would enter the pelvis. Contraction at the outlet is less common but more dangerous and often not recognized until the head is engaged.

In obstructed labor the peritoneal fluid was some times increased in amount. In some cases Bandl's ring was present and required incision. The lower uterine segment was very thin and the upper segment in a state of tonic contraction. Intact membranes usually mean that the child is safe for the time being. As a rule the lower uterine segment and cervix were nipped by the head on the pelvic brim. In late cases with obvious infection the chorion was yellow and stripped off with difficulty.

Prolonged labor much interference and the presence of Bandl's ring constitute strong presumptive evidence of infection. A discharge developing during labor after rupture of the membranes and associated with soreness and redness of the vulva is almost certain proof. Offensive liquor from the uterine cavity giving a positive culture is positive proof of infection.

In all of forty three cases which were operated upon early in labor before or soon after rupture of the membranes the mothers and infants survived. All of the women who died in the other cases except two who succumbed under anæsthesia were greatly exhausted and definitely infected. There were ten maternal and twelve fetal deaths. All but two of the infants that died were dead at the time of operation. Four of the mothers of dead infants died and eight recovered. In the author's opinion cesarean section was more advisable than craniotomy in the dead babies. In cases of suspected infection subtotal hysterectomy is not indicated and when infection is definitely present neither total nor subtotal hysterectomy is of avail.

Besides cases of contracted pelvis the operation was done also in cases of placenta prævia prolapse of the cord occiput posterior position pendulous abdomen with marked Pott's disease tumor cervical and vaginal stenosis and eclampsia.

PAUL R. BULL, C. LEV. M. D.



## PUERPERIUM AND ITS COMPLICATIONS

Franko U: Puerperal Statistics for Twenty Two Years (22 Jahre Wochenbett Statistik) (Ch Gyn) Mosk 1923 cx 1: 1

The statistics here reported are the registered observations on the course of the puerperium in the provincial School for Midwives in Breslau during the period from 1900 to 1922. They form a continuation of the puerperal statistics of this institution from 1896 to 1900 which were reported by Baumm. Since for thirty six years the body temperature has invariably been taken by rectum in this institution the material is uniform and suitable for statistical comparison.

A puerperium in which the temperature rose even once to 38.5 degrees C. or over was recorded as showing fever. Cases in which it rose once to 39.0 degrees C. and was present to a slight degree for at least three days those in which it reached 39.0 degrees C. or over several times and those in which there was an evening temperature between 38.0 and 39.0 degrees C. for from eight to ten days were classed as showing marked fever. The statistics include only cases of spontaneous birth with or without laceration of the perineum and perineal suture.

In the group of cases in which internal examination was made it was found that the curves of light and marked fever remained at a constant level throughout the entire period and none of the new methods of disinfection had any favorable influence on the course of the puerperium.

The disinfectants used were lysol, light ride of mercury, and cresol soap. Since 1903 the directions for disinfection of the hands given in the Prussian Textbook for Midwives have been followed. In 1903 70 per cent alcohol was used both the sulfonate and cresol soap disinfection.

For the sake of experiment internal examinations were made also with non-disinfected hands. The curves remained unchanged. While this suggests that disinfection is unnecessary there were small isolated epidemics that could not be accounted for except by the assumption that the examining hand was the carrier of the infection.

In the 864 cases not examined there was slight fever in 29.7 per cent and marked fever in 7.3 per cent. Therefore the incidence of fever was less than in the cases in which examinations were made. The difference in the incidence of severe fever was particularly marked. This fact indicates that when the examining hand carries pathogenic bacteria with which the patient is not able to cope successfully from the beginning the resulting fever will be severe.

In the preparation of the pregnant woman the genitalia were treated by various methods with or without subsequent disinfection but the results were never so strikingly different that positive conclusions could be drawn regarding the worth of any particular procedure.

Puerperal women with laceration of the perineum have a considerably higher mortality than those without laceration. In perineorrhaphy by Baumm's technique the needle was never allowed to penetrate into the vagina; the wound was closed by deep catgut skin sutures around the wound. Fever occurred in 70.2 per cent of the puerperal cases with a malodorous lochial discharge and was present during delivery in 58.9 cases. In 54.2 per cent of the latter it was absent or very slight during the puerperium. In 26.9 per cent it was slight and in 15.0 per cent it was marked. Therefore fever during labor is of itself not an indication for artificial delivery. TILLY (G)

Miller G. J. The Treatment of Puerperal Infection. T. St. J. M. 1922 ax 168

Miller reviews the results obtained in 436 cases of puerperal infection including abortions and mis-carriages of all types, cases in which the patient was delivered before her admission to the hospital and cases from the obstetrical service. In every instance treatment was based on the principle of absolute non-interference unless bleeding demanded immediate intervention. When it was necessary to invade the cavity of the uterus interference was delayed until the acute symptoms had subsided and surgery was limited to the simple opening of pus collections.

There were forty nine cases of frank septicemia with two deaths; five of these patients were a limited moribund and died within the first twenty-four hours. Four of the other cases were complicated by pneumonia, one by a puerperal psychosis and one by a postpartal hemorrhage on the seventeenth day and two severe hemorrhages before admission. In another instance death was due to typhoid fever complicating a spontaneous abortion. Seventy four patients developed well marked local lesions such as pelvic abscesses, parametritis, peritonitis, thrombophlebitis, etc. A large percentage had symptoms which persisted over long periods of time. Temperature elevations persisting for from fifty to seventy five days were not uncommon. The tedious and stormy course of the infection was often a temptation to resort to radical measures but the end results amply justified the policy of waiting.

The total number of deaths including that of patients admitted moribund was sixteen, a mortality of 3.7 per cent. Excluding the deaths of patients admitted moribund the mortality was 2.6 per cent. Miller is confident that if the old radical methods had been used the death rate would have been higher.

ROLAND S. CROSSLAND

Biley H. The Serum Treatment of Puerperal Septicemia. Obst. & Gyn. 1924 7

The preparation of the serum to be used in the treatment of puerperal sepsis must be efficient from a serological standpoint. This means that the animals used must be infected with all the known procurable strains of hemolytic streptococci and must be bled to obtain the immune serum at a time

when the antigen is absent. The supply must be kept properly and must not be too old. While apparently these sera can be reactivated as shown by Weaver and Tuncliff especially by the addition of human serum there is nevertheless a point at which reactivation ceases. The date placed on the label should be a guarantee that the serum is active or may be reactivated up to that day.

Desensitization must be carried out before the administration of the serum if there is the slightest doubt that the result of the dermal test is negative. When these precautions are taken the serum may be considered comparatively harmless for although serum sickness appears in nearly three fourths of cases this of itself so far as is known never causes death. The usual signs are urticaria, joint swelling and occasionally some oedema of the throat occurring either immediately after the injection or later. One of the author's patients developed a condition that simulated anaphylactic shock but in this case the serum was administered by dilution and the patient received in all 1000 ccm of the solution. Practical experience has shown that dilution is not the best way of administering the dose. It is better to inject the serum very slowly without dilution.

In all of the author's cases the dosage might be termed moderate. The amount was limited to 100 ccm in twenty four hours and when serum sickness appeared no further injections were given. If this dose is repeated every day for three or four days a sufficient quantity may be given before the serum sickness appears. Bailey believes it feasible to give more than one dose in twenty four hours but he has not done so. If the temperature rises in the postpartum period and remains above 103 degrees Fahrenheit for forty eight hours the dose of 100 ccm should be given without waiting for the result of the cultures.

As parametritis occurred very regularly in Bailey's few cases it appeared that the serum had a tendency to localize the disease. The serum treatment in the first days of the fever should be followed

by the most careful treatment of the parametritis or the inflammation of the pelvic cellular tissues.

The mortality in the six cases with positive intra uterine cultures of streptococcus haemolyticus was 16.6 per cent. In the second group—not including the case of the patient who went home with a marked parametritis against advice on the first day that her temperature fell and later returned to the gynecological ward where she died—the mortality was 14.3 per cent. In the two groups together thirteen cases in all the mortality was 15.3 per cent. If the death rate is uncorrected the mortality for the entire group was 21.4 per cent.

The only published statistics the author has been able to find regarding the mortality in recent cases in New York were given in an article by Rosensohn who analyzed the bacteremia occurring in the Lying In Hospital from 1900 to 1922. In this group there were eight proved cases of streptococcus haemolyticus with a mortality of 62.5 per cent. There were three cases of non haemolytic streptococcus and two with the streptococcus combined with bacillus coli. The mortality in all of these streptococcus cases including the two with mixed infections was 61.5 per cent.

Williams obtained a cure by the administration of serum in four cases of postabortal haemolytic streptococemia with positive blood cultures.

In this article Bailey reports fourteen cases of acute puerperal fever six of which had positive intra uterine cultures of haemolytic streptococcus. The administration of polyvalent antistreptococcus serum was followed in eleven cases by the subsidence of the temperature and gradual recovery. The uncorrected mortality was 21.4 per cent and the corrected mortality 15.3 per cent.

In conclusion the author states that the administration of polyvalent antistreptococcus serum under the conditions outlined appears to be comparatively harmless and of considerable value in the treatment of puerperal sepsis.

IRVING L. CORRELL, M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Wielocki C B and Crowe S J: Experimental Observations on the Adrenals and the Chromaffin System. *Bull Jahn* 11: 11-12 p. 1914

With the hope of producing the symptoms of Addison's disease the authors attempted to cause adrenal insufficiency in animals by removing varying amounts of adrenal tissue. Their experiments showed that total extirpation of the adrenals in dogs and cats always resulted in death within a few days but that as long as a fragment of cortex equal to one fifth of the entire cortical area was left the animal survived without symptoms and without showing any manifestations of Addison's disease. This work demonstrates that it is the cortex and not the medulla of the adrenal which is necessary for the maintenance of life. The same finding has been made by other workers.

The injection of destructive chemicals or toxic substances directly into the gland and the ligation of the adrenal veins to produce a gradual insufficiency failed to have the desired effect.

To secure a more reliable method of establishing adrenal insufficiency and in the hope of producing in dogs a picture resembling that of Addison's disease the authors removed various amounts of adrenal tissue and implanted it in the remaining portion. No symptoms of Addison's disease resulted but the radium caused local necrosis of adrenal tissue and the death of animals in which enough of the adrenal cortex had been left to maintain life.

In a further study of the abdominal chromaffin body the authors found that in two animals the total removal of the chromaffin body and the medulla of the adrenals caused no symptoms. In dogs dying as the result of total destruction of the adrenal cortex a marked terminal fall in the blood pressure and temperature was observed.

H L S. FORD M.D.

Rehn F: Functional Diagnosis of the Kidney in Surgery. (1) *Chirurgia* 9: 359

The work performed by the kidney under physiological and pathological conditions can be understood and estimated correctly only when the exchange between the blood and tissues is taken into consideration. On this basis Rehn endeavors to construct a diagnosis of renal function.

The maintenance of isotonia (the quantitative constancy of the ions composing the salts in the blood serum and urine) and the maintenance of isotonia (regulation of osmotic pressure) require an intact kidney, the most delicate excretory filter

of osmotically active ions as well as of excess acids in the blood.

According to the view generally accepted today isotonia can be restored only by an exchange between the tissues and the blood and for every substance in the blood serum which may be demonstrated in the urine there is a definite concentration at which secretion by the kidneys begins. Because of the sensitivity of the kidneys, derangements of isotonia and isotonism must be reflected in the renal secretion. On the other hand changes in the kidney itself must exert an influence on the course of this regulating action.

As a measure of the capability of the kidney to respond to a change in the acid-base ratio in the blood, Rehn uses the hydrogen ion concentration of the urine. To test the influence of renal disease this response may change.

To test renal function Rehn raised the acid content of the blood artificially by administering hydrochloric acid or increased the alkali content by injecting intravenously a 4 per cent solution of bicarbonate of soda. The response of the healthy kidney to this derangement was evidenced by a change in the proportion of acid to base in the urine. The plan of Rehn's experiments was as follows:

In the morning before any food had been taken the patient was given to drink 300 ccm of water containing 20 drops of dilute hydrochloric acid. Two hours later a ureteral catheter was introduced and the hydrogen ion concentration of the urine from each side was determined by the Michaelis method. Then 30 ccm of a 4 per cent solution of sodium bicarbonate were injected intravenously and beginning three minutes after the injection the hydrogen ion concentration was determined at brief intervals for seven minutes or longer according to circumstances.

From tests made in 150 cases, Rehn distinguished five types of secretory disturbances in which the acid or alkali secretion was changed.

Definite facts regarding topical diagnosis were discovered in animal experiments. In tubular nephritis caused by bichloride of mercury there is in the first stage a derangement in the secretion of acid secretion; alkali remains the same. In the second stage the capacity to secrete acid is negative; the urine is alkaline and the administration of sodium alkali causes little variation. In glomerular nephritis (from Habu poison) the capacity for secretion in the first stage is good for acid but negative for alkali. In the second stage the reaction of the urine is neutral and the administration of acid or alkali causes a very slight variation toward an acid or alkaline reaction. In the third stage there is a

stiffening of the kidney the secretion of acid is disturbed and the secretion of alkali and the effect of sodium bicarbonate are negative SCHMIDT (G)

Lee Brown R A The Circulatory Changes in Progressive Hydronephrosis *J Urol* 1924 11 1

The author shows that the changes in hydronephrosis are primarily those of an ischaemia and that the glomerular and tubular changes are secondary to and the result of this ischaemia

The method followed in the series of experiments reviewed consisted in tying the ureter in a series of rabbits killing the animals after varying periods of time and then examining the kidneys microscopically after progressive grades of hydronephrosis had been produced To demonstrate the gross vascular changes an arterial injection of barium sulphate was made and a roentgenogram then taken The microscopic changes were demonstrated by an intravenous injection of Berlin blue at 200 mm pressure which clearly defined even the finest capillaries

The changes in the circulation in hydronephrosis are both immediate and delayed First there is an engorgement of the entire kidney the hyperaemia being due to its continued secretion into a closed sac The tension in the renal pelvis continues to increase until this tension is equal to the secretory pressure of the kidney The destruction of the tubules and glomeruli is gradual Some secretion goes on in some of the glomeruli for a long time As the degree of hydronephrosis progresses there is a definite increase in the pressure from the pelvis toward the kidney capsule which compresses all of the kidney parenchyma and tends to flatten out the vessels and tubules As the process becomes more advanced the parenchyma becomes atrophied until only a shell remains C D HOLMES MD

Coenen H and Silberberg M Perirenal Hydronephrosis Its Origin and Relation to Perirenal Haematoma (*Deutscher Monatsschrift für Urologie*) 1923 11 374

The authors report a case of perirenal hydronephrosis (the eighth in the literature) in which the condition was bilateral and was associated with a true hydronephrosis The operative autopsy and histological findings (the patient died from carcinoma of the bladder) are described in detail and should be read in the original article

The visceral wall of the perirenal cyst was found to be nothing else than the markedly granulating and haemorrhagically infiltrated fibrous capsule of the kidney It was evident from the similarity in structure the content of intact fibers and the transition of the outer into the inner layer that both walls of the cyst were part of one and the same membrane the proliferation of fibrous capsule of the kidney had been divided by an exudate into two parts The cyst was therefore the product of a

chronic serous inflammation of the fibrous capsule of the kidney—a serous perinephritis As the kidney itself was only slightly changed by interstitial nephritis the serous perinephritis must be recognized as a distinct entity

Normally the renal capsule is an independent structure with its own blood supply and lymph tracts Therefore from the anatomical standpoint also the serous perinephritis must be considered a distinct condition and the cause of the perirenal hydronephrosis A lesion of the tunica fibrosa to the renal surface in the absence of inflammatory changes in the kidney which is so often observed at autopsy the authors believe is the terminal stage of an old perinephritis without much exudate and with no demonstrable infection of the exudate This finding is comparable to adhesion of the leaves of the pleura in cases in which the lungs appear normal Possibly the only indications of the serous perinephritis were an unexplained lumbago and symptoms in the region of the kidney

The perirenal haematoma and the hemorrhage into the kidney bed may be explained in the same way It is possible also that the perirenal hydronephrosis may have developed from an encapsulated perirenal haematoma the contents of which were resorbed as the result of transudation of the serous fluid

When the renal cortex becomes permeated by small abscesses a perinephritic abscess develops a change analogous to that which occurs in suppurative pleurisy and meningitis Interstitial nephritis favors the development of the inflammatory oedema in the fibrous capsule and a similar influence must be attributed also to an associated hydronephrosis of the posterior part of the renal pelvis which was found in four of the eight cases reported

The last cause of perirenal hydronephrosis to be considered is bacterial toxins The heretofore generally accepted nephrectomy may usually be avoided by opening and draining the cystic sac

The diagnosis should be made when hydronephrosis of the pelvis is assumed the findings of ureteral catheterization do not agree and the chemical composition of the fluid does not correspond to that of the urine excreted JANSSEN (Z)

Cunningham J H and Graves R C Renal Infections *Surg Gynec & Obst* 1924 38 39

Experimental and clinical evidence point to the haematogenous origin of renal infection but ascending infection is often the only explanation of kidney involvement There are three types of ascending renal infection (1) extension upward along the lymphatics in the ureteral wall (2) extension along the ureteral lumen against the column of urine and (3) extension along the anatomically intact ureteral lumen the bacteria being carried upward by the force of bladder regurgitation The authors discuss the last mentioned type

The regurgitation of vesical contents has been proved experimentally When there is high intravesical pressure the frequency of ureteral peristalsis

is increased but dilatation and ineffective emptying result. With overdistention and fatigue of the bladder the expulsive waves finally cease. After regurgitation the bladder pressure is transmitted directly to the renal pelvis. When the ureters have been disturbed in previous operations the degree of ureteral activity is of slight importance in the production of bladder regurgitation. Reverse peristalsis of the ureter plays no part. Regurgitation has been proved roentgenoscopically.

The chief factor in the production of regurgitation lies in the bladder as the reflux never occurs unless the vesical musculature has an active tone. The tonic contraction of the bladder wall against the distending fluid especially when there is obstruction of the vesical neck opens up the ureteral orifices sufficiently to permit regurgitation. Renal infection following suprapubic prostatectomy may be due to ureteral regurgitation and temporary blocking of an indwelling catheter during bladder drainage. Ureteral reflux and regurgitation of infected urine are important factors in renal infection and explain the renal infection associated with bladder neck obstruction when the ureteral orifices appear normal cystoscopically.

Renal infection varies in degree from mild pyelitis or pyelonephritis to more or less kidney destruction. The differentiation between the hematogenous and ascending infections is difficult. The absence of vesical neck obstruction and of septic foci suggests a hematogenous origin. Negative blood cultures do not preclude the blood route as the culture may be positive during a rigor. The organisms most commonly found are the pyogenic cocci and the colon bacillus. These are usually associated with metastatic foci.

The pathology of acute unilateral hematogenous renal infection differs from that of acute bilateral infection the latter being part of a septicemia or pyemia whereas the former is due to minute emboli in the terminal vessels of the kidney.

The renal pathology of blood stream infection is of two types: (1) abscess formation and (2) diffuse inflammation without destruction of tissue. In the former there are disseminated small separate foci of suppuration or milky abscesses which may enlarge and coalesce rupture the kidney capsule and form a perinephritic abscess. The organisms found are the pyogenic cocci staphylococci and the streptococcus pyogenes. The second type which shows no abscesses or solution of tissue and the same pathology as the hematogenous type of infection is usually due to ascending infection. As a rule the colon bacillus is recovered.

The clinical course and treatment differ in these two forms of disease. When a kidney shows focal abscesses and toxæmia nephrectomy is necessary whereas in the diffuse non-suppurative form of disease less radical measures are indicated. The former condition must be differentiated from acute gall bladder disease ruptured duodenum or gastric ulcer and appendicitis.

The severe cases require nephrectomy. The mild renal infections usually seen are amenable to treatment by forced fluids urinary antiseptics and free catharsis. In the more obstinate chronic cases drainage of the renal pelvis is advisable. All sources of focal infection in the body and all obstruction to free drainage in the urinary tract must be removed.

LOUIS NEWELL M.D.

Dyke S. C. and Maybury B. C. On the Attempted Production of an Ascending Renal Infection in Rabbits. *B. J. S.* 1924, 1, 106.

The authors report the results of experiments on rabbits in which they attempted to produce an ascending infection of (1) the ureters and (2) the kidneys. The organism used was the staphylococcus.

In the attempt to cause infection of the ureters from the bladder the first step was to produce a cystitis. Simple injection of an emulsion of the organisms in broth did not suffice. After a trial of various methods a small piece of soft Turkey sponge impregnated with 10 drops of the emulsion of the organisms in broth was introduced into the opened bladder and the bladder closed by suture. In every instance cystitis resulted. In repeated experiments no infection of the ureters or kidneys could be demonstrated.

Therefore the conclusion was drawn that whatever may be the case as to the passage of urine from the bladder into the ureters the production of infection in this way does not occur readily if it occurs at all.

In the experiments to cause infection of the kidneys from the ureters the ureter was exposed through an abdominal incision and ligated at the junction of its middle and lower thirds. Through a cannula introduced into the proximal ureter an emulsion of the organisms was then injected into its lumen. Examination of the kidneys at various intervals showed the pelvis and ureter dilated with pus but it was not possible to find anywhere a cent of the infection into the tubules of the kidney.

In a repetition of these experiments in which a suspension of carmine was employed it was possible to study the effects over longer periods. The results were the same. There was no evidence that the granules reached the interior of the kidney by passing from the pelvis up the lumen of the tubules. In two experiments in which India ink was used the findings were identical.

In conclusion the authors state that at least under experimental conditions the ureterovesical junction offers an insuperable barrier to the passage of infection from the bladder upward. While it was possible to cause infection of the kidney by direct infection of the lumen of the ureters this was due not to regurgitation but to a direct spread of infection through the epithelium of the renal sinus into the interstitial substance of the kidney.

H. A. FOWLER M.D.

Aroni A Acute Metastatic Abscesses of the Kidney (Contributo allo studio degli ascessi metastatici acuti del re) *Arch ital d chir* 1924 11 266

Aroni's patient was a girl 15 years of age who had a history of furunculosis. As the findings of examination suggested a suppurative affection of the kidney nephrectomy was done. The removed kidney was enlarged especially at its lower pole. Its surface was smooth but showed several knobs. On section this part was found to be almost entirely necrotic. Bacteriological examination revealed the presence of staphylococci and streptococci. The macroscopic and bacteriological examinations confirmed the diagnosis of renal abscess. At one point histological examination showed a necrotic hemorrhagic focus with partial disappearance of the renal parenchyma. It is probable that this was the point at which a mycotic embolus became lodged and the toxin began its destructive process.

In Aroni's opinion renal abscess is more common than is generally believed. The process remains silent a long time and often when operation is performed it has reached the capsule and has become paramural.

This type of lesion must not be confused with abscess due to suppurative nephritis. Both arise from infection but they differ in their evolution pathogenesis and pathological anatomy. The abscesses of focal nephritis which are usually punctiform and very numerous seldom become large and may become cured by cicatrization. The metastatic abscesses discussed by the author are usually single and of an invading character.

The metastatic kidney abscess may result from an infective focus in the intestines, bones, skin or other structures. A preceding infective disease or an associated disease such as nephrolithiasis must be considered as a predisposing cause. When the bacteria circulating in the blood become arrested in the glomeruli the glomeruli become the center of the abscess. In rare cases the bacteria may reach the unnumbered tubules.

The abscess may open into the capsule, the kidney pelvis or the ureter or it may remain encapsulated and undergo serous or caseous transformation. In the latter event it may become cured if it is not large.

When such an abscess is recognized early surgical treatment is indicated. If the abscess is circumscribed nephrotomy is sufficient but if the suppuration is diffuse nephrectomy is indicated if the conditions for it are satisfactory.

W. A. BRENNAN

Livermore G. R. Intra Ureteral Manipulations *S. M. J.* 1924 11 500

When the presence of a ureteral stone is definitely established the possibility of its descent should be determined by intra ureteral manipulations rather than by operation. Usually stones beyond the renal pelvis can be forced to descend into the bladder.

The exceptions are very large stones, those embedded in the ureteral wall and those covered with spicules.

The attempts at dislodgment should be continued as long as the patient shows no ill effects and the kidney function is not markedly diminished. An attempt should be made to pass the ureteral catheter beyond the stone. If this fails a 2 per cent solution of novocaine should be injected and a second catheter passed alongside the first or the latter withdrawn and a larger catheter or bougie introduced. When the instrument has been passed beyond the calculus it may be left in place for from twenty-four to forty-eight hours. The author has devised a flexible shaft with a stone grasping portion and a filiform attachment which can be used effectively in removing stones from the ureter by merely loosening them or changing their position. This instrument should not be employed for stone extraction. Bugbee's ureteral fulguration electrode is also good. Lewis' alligator forceps and Bugbee's cystoscopic scissors may be used for stones lodged at the intravesical portion of the ureter which cannot pass spontaneously.

Ureteral stricture may be dilated with flexible bougies. Stricture at the ureteral meatus is treated by fulguration and sitting with cystoscopic scissors followed by dilatation with bougies.

In ureterography the catheter should be withdrawn nearly to the ureteral orifice and the injection of the pyelographic medium should be made slowly as the catheter is gradually withdrawn. The catheter should fit snugly or it may be armed near its tip with a wax bulb to prevent the escape of the pyelographic medium. **LOUIS NEUWEIT MD**

## BLADDER URETHRA AND PENIS

Ballenger E. G. and Elder O. F. The Diagnosis and Treatment of Certain Conditions of the Vesical Neck. *So. M. J.* 1924 11 506

Abnormalities of the verumontanum are frequently unrecognized because urinary findings such as pus, blood, casts, albumin, etc. are absent. The symptoms are often misleading. They may be urinary such as undue frequency or pain at the end of urination or sexual such as premature emissions and impotence or they may consist of nervousness, pain in the back or thighs and a deep itching or discomfort at the bladder neck, etc. There is usually a history of ungratified sexual desire.

Four points in the diagnosis and treatment are emphasized.

1. The use of a Swinburne endoscope with rounded edges and no obturator.

2. The addition of 22 minims of 1:1000 adrenalin chloride solution to the local anesthetic solution injected through an instillator to lessen the pain of endoscopic treatment. This should be used only after the diagnosis has been established. A 1 per cent solution of novocaine or alyp may be injected into the anterior urethra and gently milked into the

deep urethra the meatus being clamped. A Bremermann instillator may then be used to carry the solution into the deep urethra.

1. The cure of bacteriuria not associated with a definite lesion in the genito-urinary tract by the application of a concentrated silver nitrate solution to the verumontanum through the endoscope.

4. The demonstration of medial lobe enlargement of the prostate and so-called prostatic snout by roentgenography and retention of the bladder with air.

L. W. NEWELL, M.D.

## GENITAL ORGANS

Schwarz O. A. and Stinkow A.: The Results of Conservative and Operative Treatment of Diseases of the Seminal Vesicles (Ueber die Behandlung konservativer und operativer Hämorrhoiden). *Monatsschrift für Urologie und Nephrologie* 1934, 19, 130.

During the last ten years the literature on the surgical treatment of diseases of the seminal vesicles has greatly increased. In America especially, gonorrhea of these organs has received considerable study. In Germany, although Voelscher's work must be considered fundamental, this subject has been greatly neglected.

The authors first describe the anatomy and physiology of the seminal vesicles. In cases of inflammation efficient treatment is hindered by their complicated structure. The old controversy as to whether these organs are mere receptacles or produce a secretion of their own has not yet been definitely decided.

Infection may enter the seminal vesicles from the urethra or by way of the blood stream. Its transmigration through the intestinal wall has not been proved.

The organisms are gonococci in 80 per cent of the cases, staphylococci in 10 per cent and pseudodiphtheria bacilli and colon bacilli in 10 per cent.

In 50 per cent of the cases of gonorrhea a catarrh is found. A chronic pus discharge is rare. Other pathological conditions are empyema from obliteration of the efferent ducts, leucosis with atrophy and pericarditis.

The symptoms and signs include pain in the perineum, blood and pus in the ejaculate, a discharge, cystitis, pollakiuria, bacteriuria, impotence, epididymitis, general malaise (especially rheumatism), neurasthenia and lumbago.

In the examination palpation should be done while the bladder is full. According to L. Guérin the vesicles are always palpable but it is claimed by others that they are rarely felt when normal. The expressed secretion should be examined microscopically. Especially in cystitis of the trigone, cystoscopic examination is of greater aid than urethroscopy. Urethroscopy is of value for sounding of the duct, the injection of drugs and injections for roentgen vesiculography. A perineal or transrectal test puncture is of little aid.

In the treatment a distinction must be made between acute and chronic inflammation. In the former rest, warmth and narcotics are indicated and massage is contra-indicated. Operation should be performed only after these measures have failed. In chronic cases there are three possibilities: (1) conservative massage, (2) or local soundings and injections from the urethra, and (3) operation consisting of direct treatment such as exposure of the vesicles or indirect treatment from the vas deferens. Vesiculotomy is indicated by symptoms referred to the urethra or genitalia, pyelitis, disturbances and rheumatoid pain. Care is necessary in the choice of cases. Vesiculectomy is usually performed in case of tuberculous or tumor (myoma, sarcoma, carcinoma). It is important that the disease be limited, which is seldom the case. Voelscher classifies operative procedures as follows:

1. Operation from above: (a) suprapubic, (b) inguinal.

2. Operation by the transrectal route. This has been abandoned in favor of:

3. Operation from below: (a) perineal, (b) ischio-rectal.

The method of choice is operation from below by the ischio-rectal route. R. MEYER (2).

Roggiero O.: Experimental Research on the Effects of Decortication of the Testicle (Ricerche sperimentali sulla distruzione decorticante del testicolo). *Archivio di Chirurgia* 1934, 12, 33.

Roggiero summarizes the results of his experiments as follows:

1. Partial or total decortication of the testicle in the rabbit causes lesions which are very similar except in their degree and extent.

2. Such lesions affect the seminiferous epithelium and the connective and the interstitial cells. They are always more marked in the central parts than in the peripheral parts.

3. The changes in the seminiferous epithelium consist in disintegration of the physiological function and the progressive disappearance of the investing epithelium. In every case spermatogenesis is arrested.

4. The interstitial cells are more resistant than the seminiferous epithelium but some atrophy of the intertubular connective tissue.

5. The final result of decortication is especially in the total is fibrous atrophy of the testicle in its epithelial portion due to the abrupt interruption of the vascular or nervous connections.

W. A. BREX (2).

Bumpus H. C. Jr.: Radium in the Treatment of Benign Hypertrophy of the Prostate. *J. Urol.* 1934, 21, 63.

The marked reduction in the size of malignant prostate glands following thorough radium therapy led to the hope that an equal reduction might be produced in enlarged benign prostates and that

the symptoms of obstruction and the residual urine would then disappear.

Eleven patients in the Mayo Clinic have been treated by radiation. As the first patient was treated in January, 1919 and the last in April, 1922, none has been observed less than a year and a half since the treatment. The method of administering the radium was similar to that employed in the treatment of malignant prostates. An effort was made to expose every part of the gland to approximately the same amount of radiation and to prevent any one area from becoming overdosed. Four needles containing 12.5 mgm. of radium were inserted in the prostatic tissue through the perineum and at the end of three hours were withdrawn the length of the radium bearing portion and allowed to remain in this position for three hours. The procedure was then repeated. Thus during a nine hour exposure twelve areas of prostatic tissue were exposed to radium emanation, no one area being exposed sufficiently long to produce necrosis and slough. Approximately 500 mgm. hrs. of radiation resulted.

In many cases multiple emanation tubes containing usually less than 0.5 mc. of radium emanation were thrust directly into the prostatic tissue through a direct cystoscope. Usually four such tubes were placed in each lobe, the dosage being approximately 700 mgm. hrs. Rectal applications directly covering the gland of approximately 400 mgm. hrs. were also applied. A combination of these methods insures an aggregate radiation of approximately 1,500 mgm. hrs. throughout the entire gland and prevents any one area from receiving a dosage sufficient to produce extensive necrosis or slough such as occurs when needles are allowed to remain in one position for many hours. It is the absorption of toxic material from areas of necrosis that results in the marked febrile reaction commonly seen after radium treatment. Localized areas of necrosis occur around the bare tubes since this method of application does not permit filtering out the short beta rays which are exceedingly destructive to the immediate tissue surrounding the tubes but the rays do not penetrate far and although such multiple areas of necrosis are often the source of a febrile reaction they usually remain localized and do not cause the extensive toxemia that is produced by large single areas of necrosis around radium bearing needles left in place too long.

The effects of radium on benign and malignant tissues are first a localized edema and inflammation and then fibrosis, hyalinization and endarteritis. The endarteritis is responsible for the exceedingly slow healing of radium burns and explains the excellent results that may be obtained from adequate radiation of bleeding prostates. If it is remembered that bleeding is more common in cases of benign hypertrophy of the prostate than in cases of cancer it is evident that as a haemostatic radium is most useful in the former. Several cases have been treated in the Mayo Clinic in this manner with very satisfactory results.

Associated with prostatic enlargement there may be severe almost constant pain and discomfort in the perineum and groin which is often very resistant to treatment. The cause is obscure but if there is little or no residual urine it seems hardly justifiable to recommend prostatectomy. Two patients of this type were treated with radium. After a period of more than three years they reported that they had had no recurrence of symptoms and were pleased with the results of treatment. In five cases with marked enlargement of the gland and several ounces of residual urine treatment with an average of from 1,000 to 3,200 mgm. hrs. of radium gave disappointing results. In two prostatectomy was performed within a month and in two others a cystostomy was done because of increasing signs of obstruction. In the fifth case the risk of surgery was deemed too great because of the patient's poor general condition and a second course of radium treatment was given in the hope of producing sufficient atrophy of the gland to permit voiding. This was not accomplished and the patient was compelled to use a catheter for the remainder of his life.

In certain cases the fibrosis that develops in the substance of the gland as the result of the application of radium is followed by cicatrization of the urethral orifice corresponding to that found with contraction of the neck of the bladder. When this occurred in one of the cases a punch operation was performed to relieve the obstruction. In this case as a result of the radium treatment the residual urine was reduced from 10 to 2 oz. but never entirely disappeared.

In two patients with slight prostatic enlargement and somewhat less than 4 oz. of residual urine the most satisfactory results were obtained from the use of radium. The symptoms of obstruction were relieved and the further enlargement of the gland probably retarded.

#### MISCELLANEOUS

Welfeld J. Two Cases of Non Parasitary Chyluria With a Review of the Literature. *J. Urol.* 1924, xii, 19.

The author reports two cases of chyluria and reviews the literature on the subject.

CASE 1. The patient was a 23 year-old woman, a native of Chicago of Polish ancestry. She had had some of the common diseases of childhood but was well until the chyluria appeared in her ninth year. The condition was of spontaneous origin and not preceded by any injury. The only symptom complained of was occasional irritation on voiding. A heavy meal eaten at night was followed by the evacuation of bloody clots or a cheesy material associated with the irritation mentioned. The patient was able to control this to a certain extent by limiting her diet and drinking a large amount of water. In the past year she had lost 20 lbs.

The first cystoscopic examination showed a heavy grayish white film at the base of the bladder.



and large balloon like masses about each ureteral orifice. Another mass in the base of the bladder resembled a lymphangioma. At a second examination four days later the hematomatous mass could not be seen and the balloon like masses appeared to be an *ordema bullosum*. On irrigation the edema like appearance was found to be due to gelatinous masses. These masses were washed away by the irrigating fluid. The other bladder findings were normal except for the presence of the chylous fluid in the urine. The fat content of the urine was 4.2 per cent. Microscopic examination showed the absence of filaria or other pathogenic organisms.

**CASE 2.** The patient was an American male 34 years of age who had come to Chicago six months previously. His history was negative up to five years ago when the chyluria first appeared. At times the chyluria disappeared for three or four months. The patient was physically well and robust. The chyluria was discovered entirely accidentally when he was operated upon for hydrocele. He refused a cystoscopic examination. The urine findings were similar to those in the other case. No filaria were found and the blood findings were normal.

The author regards as significant the fact that in neither of these cases was any difficulty experienced by the patient although in one the symptom had been present for fourteen years and in the other it had been intermittent. Neither of the patients had ever been in a tropical country.

Chyluria may result from any condition which causes a direct discharge of chyle into the urine as from the blood due to malfunction of the kidney or from a lymphatic fistula connecting with the bladder or any other part of the urinary tract. Usually it appears suddenly in a subject apparently healthy. It may be unilateral or bilateral. The only constant sign is the presence of chyle in the urine. Microscopically the urine contains fat in the molecular form rather than in globules or large drops. In the tropical variety of chyluria the embryos of *filaria sanguinis* occur in the urine almost constantly. In 1907 Hertz collected forty-five cases from the literature the ages of the subjects ranged from 13 to 66 years.

Chyluria may resemble pyuria and lipuria. In pyuria the microscope reveals the presence of pus cells. In lipuria the fat is found in large drops or fine needles and crystals.

Chyluria is ordinarily a condition of long duration. Sometimes a spontaneous cure occurs, but in other cases it leads to anemia and severe debility ending in death. Usually the subject enjoys good health, but weakness and wasting result from the continuous loss of fat and sometimes there is mental depression from worry over the condition.

Both Manson and Castellani maintain that there is no justification for the use of drugs in the treatment. The patient should avoid fatty foods as much as possible and should rest after meals.

C. D. H. LINES, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Finglbach W and McMahon A Osseous Development in Endocrine Disorders R 4 1 27  
19 4 11 3 8

In X ray studies of the bones in more than 2000 cases the authors attempted to determine (1) the normal osseous development at the various ages from 1 year to 25 years the period of skeletal growth (2) the variations from the normal in endocrine disorders and (3) whether the internal secretions of the various glands exert a specific effect on certain sets of bones such as the flat long and short bones

As the normal the authors accepted the outline given in Gray's Anatomy Normal subjects were examined from 8 to 10 days after birth when they were 6 months 1 year 18 months and 2 years of age and then every year up to the age of 25 years at which time normal osseous development is complete All of the bones of the body were considered The findings in each of the endocrine disorders were compared with those in normal subjects of the same age The results and conclusions drawn from them are as follows

1 The information derived from the roentgenological comparison of endocrinopathic and normal subjects indicated that the X ray signs may prove of more value in diagnosis than the basal metabolism blood chemistry and other so called specific and laboratory determinations

2 In uncomplicated hypothyroidism retardation of development of all of the bones of the osseous system (not only of the carpal) was demonstrated roentgenologically at every age up to that at which normal skeletal growth is complete

3 Cases of hypogonadism and eunuchoidism showed consistently a definite late fusion of the epiphyseal ends of the long bones The overgrowth of the long bones in such cases is explained by the late closure of the epiphyseal ends in the presence of an active hormone from the anterior lobe of the hypophysis

4 In insufficiency of the anterior lobe of the pituitary gland in which with the primary deficiency of the anterior lobe there is a secondary deficiency of the generative organs late closure of the epiphyseal ends of the long bones is associated with undergrowth of these bones The cause of the undergrowth in the presence of open epiphyseal ends in this disorder is the absence of the hormone from the anterior lobe of the hypophysis

5 In the pluriglandular syndrome the development of the osseous system as demonstrated roentgenologically is very difficult to interpret From the studies made thus far it appears that the following

facts obtain (1) In the thyrotoxic disorder there is an advance in the development of the carpal and long bone nuclei over that in hypothyroidism unassociated with pituitary disorder (2) In pituitary thyroidism there is a retardation of the appearance of the osseous nuclei as well as of fusion of the epiphyseal end of the long bones which is more marked than that in hypothyroidism and normal subjects (3) The markedly heterogeneous pictures presented in the multiglandular syndromes depend upon the sequence in which the various disorders were superimposed upon each other For this reason the combination of the same glandular disorders may present entirely different X ray pictures at the same age

6 In the less frequent but very instructive condition of puberty praecox (suspected pinealism) the most unusual advancement in development of the bone nuclei and early fusion of the epiphyseal lines were found The four cases studied demonstrated an effect exerted by the gonad hormone upon osseous growth and development and presented a picture exactly opposite that consistently found in the hypogonad subject

7 The few cases of thymolymphatism apparently presented much the same osseous retardation as mild hypothyroidism The development of the bones in positive cases of enlarged thymus should be more thoroughly studied to clear up this much mooted point of the relation of thymus function to the development of the bones

F WALTER CARRIERS MD

Girdlestone G R The Treatment of Tuberculosis of Bones and Joints B 1 M J 9 4 1 044

Bone tuberculosis is best treated in open air orthopedic hospitals and after the patient has been sent home as cured a careful check should be made on his living conditions

Heliotherapy achieves results depending upon the extent to which the photochemical activity of the sun's rays is cut out This effect is best eliminated by developing the pigment of the skin by gradual exposure of the body Until and unless this pigment is developed only a small dose of the sun's rays can be tolerated and more than this is definitely harmful The ability of the skin to become pigmented is a good index in the prognosis Sunlight and fresh air promote an active hyperemia of the skin and cause a beneficial reflex stimulation of the deeper organs

The parts should be immobilized accurately and comfortably and measures should be taken to prevent constriction of the circulation and interference with respiration There is a difference of opinion as to the importance of obtaining ultimate mobility of

the parts but the author believes that except in the minority of cases in which ankylosis is desirable the treatment should consist of three stages: (1) uninterrupted rest during the active disease; (2) comparative immobilization during the stage of healing; and (3) free use under careful supervision after healing.

In the cases of children under 16 years of age operation is seldom if ever warranted but in the cases of adults in which ankylosis is the best that can be hoped for surgery may be a lifesaver. Rest, good food, and heliotherapy if begun sufficiently early and continued long enough will almost always effect a cure that skilled after care will make permanent.

Guerra C. C. M.D.

# Berkeliser, E. J.: Multiple Myelomata of Children. *Arch. Surg.* 2: 2924-25, 1933.

The author reports two cases. The first was that of a boy 12½ years old who was admitted to the hospital with a provisional diagnosis of lottia disease because of deformity of the vertebral column. Headache and vomiting suggested the onset of tuberculous meningitis.

X-ray examination revealed multiple areas of perforation of the skull and involvement of all the bones of the body except those of the hands and the feet. The course of the condition was progressive with marked anemia, emaciation, and multiple pathological fractures. Death occurred at the end of a year in the hospital. The diagnosis of lympho-

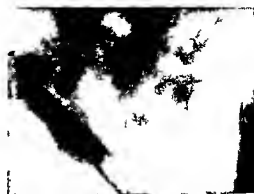


Fig. 2. Appearance of eye and hip at time of death in Case 1.



Fig. 3. Multiple perforations of the skull in Case 2.

cytic myeloma was confirmed by autopsy and microscopic examination.

The second case was that of a girl 3½ years old who had had a limp for a year and finally developed marked bilateral exophthalmos and multiple tumors of the skull which transmitted the pulsation of the cranial vessels. The course of the condition was progressive with marked anemia and emaciation. Death resulted one and a half years after the diagnosis was made. The diagnosis of xanthoma myeloma was confirmed by biopsy.

The author summarizes his conclusions as follows:

1. Myelomata occur in children as well as in adults.
2. In children the lesions are older than those in adults but in adults are more generally distributed.



Fig. 4. Left hip, Case 1, 11 months.

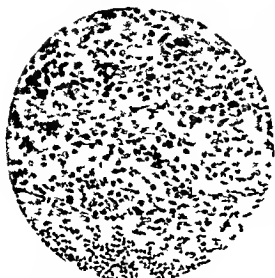


Fig 4 Fibrous and myelogenous cell with a area of lymphocytes on side ( ) in Case

3 Absence of Bence Jones protein does not eliminate myeloma. The older the patient the greater the incidence of Bence Jones protein in myeloma.

4 In cases of meningeal irritation an X ray examination of the skull should be made.

5 The treatment is palliative. Patients with multiple bone tumors and those with vertebral lesions can be made very comfortable by placing them in a posterior molded plaster shell.

Bloodgood J C. The Giant Cell Tumor of Bone and the Specter of the Metastasizing Giant Cell Tumor. *Surg Gynec & Obst* 1924 38: 1784.

The author reports observations indicating that there is no reason to fear a malignant giant-cell tumor nor metastases from any typical giant-cell growth of bone in which giant cells of the epulis type predominate even though there may be local recurrences. This claim is based on a study of 177 cases without a single death from metastasis and in 19 per cent of which recurrence followed curetting operations and necessitated resection or amputation. The author concludes that the case reported by Ewing and Stone in which recurrence and metastases followed curetting is unique if the tumor is accepted as one of the benign giant-cell type originally described by Ewing. Seventy-five of the 177 cases studied by Bloodgood were cured by one or more curetting operations, the only cause for a recurrence seeming to be some fault in the technique of operation although this was not definitely proved.

If curetting is done the author advises that it be done thoroughly with the use of an electric canter and a retractor about the limb if possible. The

bone shell should be cauterized with pure carbolic acid followed by alcohol and the cavity then packed with gauze saturated with 50 per cent zinc chloride. The advisability of the use of the X ray radium and toxins will be discussed in a later article.

Twelve illustrations are presented to indicate the variability especially under magnification in the size and morphology of the cellular tissue in which the giant cells of the epulis type are embedded. It is because of this variability that the giant cell tumor is sometimes considered malignant.

Bloodgood concludes that a central bone lesion with an intact bone shell which resembles the giant cell tumor in the gross picture and more or less closely in the microscopic picture is benign. The only possible malignant growth of this description is the osteogenic sarcoma of the chondromyxoid type which is readily distinguished from the giant-cell tumor in gross and microscopic section.

CHESTER C. GUY, M.D.

Ely L. W. The Second Great Type of Chronic Arthritis in Its Relation to Industrial Accidents. *Cases* C 1 for 12 & 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

The relationship of trauma to the second great type of chronic arthritis is a question that frequently arises in industrial accidents. When in the past the X ray examination after an injury showed the spurring and lifting of the bones characteristic of the arthritis known as hypertrophic degenerative osteoarthritis these changes were explained by the trauma but in recent years the view has been challenged. Trauma has been suggested as the cause of almost every bone disease but it has been proved that bone can be injured only by fracture or disease of the marrow. The gross bony changes in these cases must require a long time for their development; they cannot occur a day or two after injury. The disease is almost invariably seen in later life in persons having articular abscesses at the roots of dead teeth. In many cases intestinal parasites have been found in the stools. The pathological changes in the tissues are as follows:

1 Bone production under the articular cartilage causing the cartilage to degenerate but not forming bony ankylosis and necrosis in the marrow causing preponderating bone absorption.

2 Degeneration of the cartilage and elimination of the subjacent bone.

3 Thickening and fatty and fibrous degeneration of the synovial membrane with chronic synovitis.

These changes may cause pain but more often do not. In a case of *wrenched joint* the roentgenogram will show characteristic changes of arthritis and after a time the patient will complain that the pain continues.

In Ely's series of cases trauma was not an etiological factor. It seems probable that injury to a joint which has suffered arthritic changes would cause recurrence of pain and stiffness. In a normal joint the injured tissue will soon heal and the pain and stiffness will disappear.

Fly believes the word trauma is loosely employed. Trauma can cause only a sprain or an intra-articular fracture of a joint.

In intra-articular fractures of the lower limb pain, stiffness and restriction of motion especially in elderly persons it is probable that the fracture sets free in the joint infective material which was previously locked in the bone. R. C. LOWRANCE, M.D.

Koentz F.: Roentgenological Observations of Tuberculous Joints. (Koentz, henla hr x i berkulosen (lenke) Z. n. d. f. Ch. 1924 1 15)

Koentz reports the most important findings in 122 cases of roentgenological observations of the six large joints.

An important change is the atrophy of the adjacent bones but this is not included in the essential associated findings. In elderly persons a coarse broad outlining of the individual bone trabeculae was frequently noted. Atrophic changes deforming changes such as coxa vara and subluxation.

In all phases of the disease which are usually the expression of a severe disturbance were observed in 10 per cent of the cases most of which were those of children and young persons.

In twelve patients the roentgenogram indicated that the bone was the primary site of the tuberculous but tuberculous sequestra of any considerable size were rare. In advanced cases there is often destruction of bone extending into the joint cavity.

The tuberculous character of a joint involvement is suggested by round bony defects at the site of insertion of the joint ligaments defect formations at the insertion of the capsule and constrictions. Cartilaginous changes were observed nineteen times. Occasionally the joint space appeared widened because it was forced apart by fungous masses but more often it appeared reduced as the bone shadows were approximately the destruction of the cartilaginous surfaces. In eleven cases important information was obtained from a study of the soft parts. Thickened joint capsules perforations of the capsule and gravitation abscesses may be visible on the plate. Taur (Z).

Vuliet H.: Pathological Separation of the Femoral Neck in Girls During Puberty. (L'écoulement pathologique de l'élément rattaché aux fillettes à l'époque de la puberté) Pr. méd. P. 1924 2 153

Vuliet reports five cases of separation of the femoral neck in girls between 10 and 15 years of age. The subjects were of a more or less adipsogenic type and gave a history of intermittent and moderate claudication pain and fatigue. A careful clinical examination was negative and the X-ray showed no striking change. The physiotherapeutic separation of the femoral neck was discovered after a trifling accident which might have been either its cause or its result. There was no apparent rarefaction of the bone. Several months of immobilization

in extension abduction and slight internal rotation gave solid union usually without shortening. Within from 10 to 12 months functional recovery was practically complete. In some of the cases the X-ray showed the femoral neck broadened shortened and slightly changed in angle and the femoral head moderately flattened and of somewhat varied density. In spite of these findings function was practically normal.

During the early stage of the condition it is often wrongly diagnosed as tuberculous or syphilitic especially if the disability was not preceded by trauma. Chliren should be placed at rest in time to prevent the epiphyseal separation.

Vuliet believes that many cases of the juvenile type which differ considerably in appearance are part of the same process the characteristics of which are established gradually. The deformity of the epiphysis after separation strongly resembles juvenile osteochondritis deformans and the coxa vara of adolescents.

In both children and adults the pathology of the hip is governed by mechanical factors and the blood supply. While lesions of the same type may show marked variation in their evolution they are all due fundamentally to a nutritional disturbance. Bone necrosis leads to pseudoarthrosis deformity and deep changes in the general form of the femoral extremity. In children these are allowed by solid fixation and reorganization and adaptation of function to the new shape. Frequently surprisingly good results are obtained in cases of fracture in children which appear to have the most unfavorable prognosis. WALTER C. BURKE, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Hedlung F.: The Treatment of Acute Septic Osteomyelitis of the Long Bones. (Z. Orthop. u. Ch. 1924 1 153)

The operative method recommended by the author and employed by him in twenty-one cases consists in: (1) extensive chiselling of the affected bone with removal of all macroscopic diseased bone; (2) the introduction of Carrel tubes for thorough irrigation of the cavity; (3) the drainage of abscesses in the soft parts; (4) careful arrest of the hemorrhage in the soft parts; and (5) suturing of the muscles and skin around an opening for the Carrel tubes. On the eleventh or twelfth day the irrigation with Dakin's solution is stopped and the tubes and the skin sutures are removed.

This method relieves the pain shortens the period of healing from an average stay in the hospital of 120 hundred and sixty-one days to one hundred and one days prevents necrosis of the bone and usually renders sequestrectomy unnecessary.

Two cases in which sequestration of the bone occurred in the case of young boys with acute osteomyelitis of the clavicle and ulna respectively in which the bone was surrounded by pus. Sequestrectomy

omy became necessary also in a case of osteomyelitis of the tibia in a 10-year-old boy because the irrigation fluid employed had been too weak. In the case of a 59-year-old man who had been operated upon for acute osteomyelitis of the tibia the treatment failed and amputation was indicated because of a pyogenic infection of the ankle joint with associated peritarticular abscesses. Two patients died of pyæmia which began with great severity the day after the operation. In all of the other cases however the method brought about complete healing without sequestrectomy. Occasionally one or two small sequestra become separated spontaneously.

Following the treatment described the skin cicatrix has generally been narrow and loose and there has been no recurrence in the form of bone abscesses or chronic osteomyelitis and no slowly healing bone cavities.

Gaz ottl 1. An Experimental Study of Tenodesis (C n t ibuto sperim ntale alla to odesi) i stal d tkr 1934 in 365

The author made a histological examination of the new tendon insertion in subperiosteal and tunnelization tenodesis performed on young dogs. A subperiosteal tenodesis and a transosseous tenodesis were done simultaneously on one of the front legs the dogs were killed after from one and one half to three and one half months and the segments were then removed for study.

When the tendons were fixed by skeletal transfixion or by penosteal bridges the relations given them by the operation were usually maintained. When the new relations were lost this occurred in the transosseous tenodeses the subperiosteal tenodeses remained unchanged. However the tendons used in the transosseous tenodeses were finer than those used in the subperiosteal bridge operations and in the latter a stronger type of suturing was possible. These facts the author believes might account for the differences noted.

The histological state of the tendons used for fixation in the free tract beneath the periosteum and in the bone canal never deviated from the normal. This is in agreement with the gross anatomical findings which demonstrated that the tendons remained normal in appearance.

In the author's opinion his investigations show that subperiosteal tenodesis has a definite value. While in transosseous tenodesis the stability of the transplant is certain there are times when this procedure is contra indicated. W A BRENNAN

Di Bema do A L. Resection of the Ulna and Radius of Central Sarcom of the Epiphyses. Implantation of a Double Free Autogenous Graft from the Fibula Recovery (R s o dell ulna del r d i per a roma c tral d il epfi d place autotr p a i libe d l p e n gu g i ne) Pol 1 Rome 1924 x xi ez hir o

The case reported was that of a woman aged 23 years. As the findings of the clinical and roent-

genological examinations suggested the presence of a myelogenous tumor in the distal epiphysis of the right radius resection of about 7 cm of the radius was done. Microscopic examination revealed a giant cell sarcoma. Later a 6 cm portion of the ulna was removed.

A 12 cm segment taken with its periosteum from the posterior margin of the fibular diaphysis was divided into almost equal parts and the parts were placed in the ulnar and radial defects. There after the arm was immobilized for twenty days.

X ray examinations showed that the grafts remained alive and in good alignment. Ten weeks later a bony bridge united the segments to the diaphysis of the ulna. The final result was good aesthetically but some abduction of the hand and limitation of flexion remained.

The author observed that the first contact between the diaphysis and graft was manifested by an exclusively periosteal bridge which gradually extended. This he regards as undeniable proof of the importance of the periosteum in osteogenesis.

W A BRENNAN

Häckenbroch M. Operatione Neo Arthrosl of the Knee Joint After Functional Use for Two Years (Ei oper tiv Ne arthros d s Kniegelenk na h v ja finger funktioneller Be n p uchung) Ar h f orthop Unf h Chs 1923 xi 276

In the case reported a condition similar to that described by Lever Payr Schmerz Putti and Bier was found in a knee joint mobilized by the interposition of a fat flap after twenty one months of occasionally interrupted use. Slight differences are explained by the difference in function (weight bearing) and the condition of the joint before operation. The joint contained a space about 1 1/2 cm wide which was filled with normal joint liquid. Under the influence of function the shape of the joint approximated normal.

As the result of condensing osseous pressure recesses had been formed and a double layer of connective tissue covered the joint surfaces. The external layer had a synovium resembling synovial membrane. The free edge showed many villi. Evidently the marrow took part in the formation of the lower layer. Remains of the transplanted fat were found only in the complementary joint spaces which were not due to pressure. Most of it had been converted into the fibrous covering of the joint or formed a septum like band across the joint cavity parallel with the joint surface.

Under the influence of pressure meniscus like layers of loose connective tissue had been formed. There was an entirely new double layered joint capsule the inner surface of which had a villous synovium like covering. There was no cartilage formation on the new joint surfaces. Peritarticular osteophytes and proliferative and regenerative processes (villi fat and connective tissue) could be seen on all points of the capsule and joint surface in addition to degenerative changes. Even bursa

formation and thromboses were observed. Areas with the least pressure showed the most villous formations. In many points the condition resembled a pseudarthrosis. ENGL (Z)

### FRACTURES AND DISLOCATIONS

Starr C L. The Treatment of Compound Fractures of Long Bones. *Ill* 1941 J 19 4 21 401

The victims of accidents causing compound fractures of long bones are very severely disabled and represent yearly a very large industrial and economic loss. The frequent poor handling of these cases the author explains by the following statements:

1. Textbook teaching is brief, the methods suggested are open to criticism, and the student is not given sufficient clinical contact with cases.

2. Teaching is difficult because the cases are emergencies and the students see the patient only after splints have been applied. Internist service should be compulsory.

3. The treatment requires a high degree of mechanical ability not possessed by all practitioners.

Compound fractures may be divided into two classes: (1) those compounded from within the wound being usually small and made by a splinter of bone penetrating the skin and (2) those compounded from without the wound being made by some crushing or penetrating force which is carried to the bone.

In cases of the first type a sterile dressing is placed over the wound and the skin is cleansed with gasoline for a distance of 12 in. shaved painted with iodine and covered with sterile dressings. After this the case may be treated as a simple fracture.

In cases of the second type the injury to the vascular structure may be so great as to demand immediate amputation, but in those in which the vessels escape injury other treatment is usually possible.

The most common infection in the cases seen during the war was due to the gas bacillus and the loss of time before treatment was begun made the prognosis exceedingly grave. Tetanus was also a common complication. While it is obvious that most of the conditions which occur during war and are responsible for the great calamities of war surgery can not occur in injuries sustained in civil life, inoculation with antitetanus serum is probably advisable in all such cases. It is necessary first, however, to combat shock by hypodermic injections of morphine, the application of heat by means of hot water bottles and blankets and the administration of stimulants such as hot coffee and oil fluids and glucose by the Murphy drip.

As soon as it can be done safely an anesthetic is administered and the limb examined and cleansed in the same way as in the first class of cases. No attempt at primary suture is made. The wound is examined for the removal of foreign bodies, loose non-viable tags of muscle and fascia. Loose and comminuted fragments of bone should not be removed unless they are practically extruded from the wound and completely separated from all sources of

blood supply. The extensive removal of these fragments is a very frequent cause of ultimate non-union. Drains of rubber tubing may be inserted and irrigation continued every three hours. If properly splinted with splints of the Thomas pattern the wound will heal well. After two weeks of adequate drainage and irrigation secondary suture is possible in a fair number of cases.

Whenever possible the wounds are enlarged to take advantage of gravity drainage. When this is impossible pockets of discharge are prevented by constant irrigation or the use of the Taylor suction drainage tank. The use of bipp (bismuth iodine petrolatum) may be of definite value if the paste is properly applied. The gross application of bipp to fill the entire cavity defeats the purpose of its use.

Adequate and early splinting tends to lessen shock, prevent further injury, limit sepsis and secure comfort. It has for its objects: (1) proper alignment, (2) recovery of the original length of the limb, (3) immobilization of the joints above and below the fracture, and (4) easy access to the wounds.

Splints depend for their efficiency on the principle of extension. The great lesson of the war so far as fractures are concerned was the marvelous utility of the Thomas splint. For transport this splint provides easy extension and in the hospital may be supplemented by the use of the Balkan frame.

The chief causes of non-union are: first, gaps due to loss of substance of the bones from the early removal of many of the comminuted fragments and second, faulty apposition due to the interposition by muscle or fascial structures. Communion increases callus formation and the probability of union. Under septic conditions bones not properly approximated may be brought into line by splinting with extension, the removal of intervening tissue and fixation with heavy kangaroo tendon inserted through drill holes in the fragments. Fixation of fragments in septic fractures by steel plates or bands has been proved harmful. The non-union results from failure to remove fibrous tissue separating bone ends is best treated with an autogenous bone graft approximately a year after all sinuses have healed. Plaster of Paris splinting must be maintained for three months before healing can be expected. Failures are usually due to sepsis, poor approximation or faulty splinting.

After perfect healing a prolonged course of hydrotherapy and massage should be employed to hasten recovery of function.

Neglect to follow up these cases is responsible for a large measure for the long periods of disability.

R C LO ENGL MD

Cleary E W. Fractures of the Spinal Column. *Clinical and Medical* 1941 19

Cleary reports fifty-two cases of fracture of the spinal column, one-half of which had been incorrectly diagnosed. He attributes the errors in diagnosis to: (1) the erroneous belief that every broken neck or broken back presents unmistakable symptoms and physical signs.

- 2 Inadequate X-ray examination
- 3 The concentration of attention on some more apparent complicating lesion
- 4 Failure to obtain a clear history of the nature and violence of the force brought to bear on the spine
- 5 Failure to make a thorough physical examination.

With regard to the treatment Cleary states that a proper fusion operation usually shortens convalescence and gives a higher degree of recovery than conservative treatment. He found the Hibbs operation more efficient than the Albee graft fusion. In difficult lumbar cases he uses a special type of double tibial graft which he describes in detail. An essential part of the after treatment is carefully directed physiotherapy.

After thorough fusion is effected by early operation industrial patients return to employment in from eight months to one year with an average permanent disability rating of from 30 to 40 per cent or less. Patients with similar injuries treated conservatively require approximately twice as long to return to work and show an average disability rating of from 40 to 50 per cent or more. Patients not receiving adequate treatment are apt to have indefinitely continuing total disability and may develop late paralysis. CHESTER C. SCHNEIDER, M.D.

**Bonn R. Bony Union in Subcapital Fracture of the Neck of the Femur** (Zu Frag der k oecher nen He l gsl ehigkeit ubkapitaler S he k l h ls fraktur) *A h f kh Ch 19 4 CX III 345*

In a previous report Bonn stated that in subcapital fractures of the neck of the femur bony union will occur only if the capsule surrounding the hip joint remains at least slightly attached and bridges the gap. Further research has since cleared up the significance of the inner capsule, answering in particular the question as to whether it merely insures the distribution of the blood supply or is itself concerned in the process of healing through

bone formation. By means of transplantation experiments it was possible to demonstrate that the capsular coating of the neck of the femur does not have an osteogenic function similar to that ascribed to the periosteum.

Proceeding from the established fact that periosteum transplanted into muscle soon produces microscopically demonstrable bony tissue, Bonn transplanted portions of the capsule surrounding the hip joint into the gluteus maximus in four dogs. The results were absolutely negative. In two further investigations he transplanted in addition to the capsule a thin strip of cortex taken from the intra-articular portion of the neck of the femur. The results of these investigations also were negative.

Six other investigations on dogs served to demonstrate the course of healing under various conditions of artificial subcapital fracture of the neck of the femur. In two portions of the capsular coat and the ligamentum teres were left intact; in two others the capsular coat was entirely destroyed but the ligamentum teres was left intact; and in two others the capsular coat and the ligamentum teres were both removed.

It was found that total necrosis of the broken-off head of the femur is not necessarily a sequel in subcapital fracture of the femur, although even in the most favorable cases definite disturbances of nutrition were apparent, particularly in the subchondral portion of the bone. Bony union seemed to be dependent directly upon the degree of necrosis of the head. The importance of the ligamentum teres femoris for the viability of the head of the femur was established beyond doubt. The head of the femur is supplied with blood chiefly through the capsule; therefore its viability is dependent to a considerable degree upon the preservation of at least a portion of the capsule. When the capsule is preserved there is an abundant production of callus, and when exact reduction is obtained in such cases the prognosis for bony union is very favorable.

WAGNER (Z)



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD TRANSFUSION

Alexander M. F. (Chief of the Experimental  
Observation on Blood Sedimentation) *et al.*  
1912, 1913, 1914

The first of the three experiments was a  
study of the effect of the transfusion of  
the blood of a normal person into the  
blood of a patient with a severe anemia.  
The patient was a woman, 35 years of age,  
who had been suffering from a severe anemia  
for several years. The blood count before  
transfusion was as follows: Hemoglobin, 10%;  
Red blood cells, 3,000,000 per cubic millimeter;  
White blood cells, 10,000 per cubic millimeter;  
Platelets, 100,000 per cubic millimeter.

After the transfusion of 500 cc. of normal  
blood, the patient's condition improved  
markedly. The blood count after transfusion  
was as follows: Hemoglobin, 15%; Red blood  
cells, 4,000,000 per cubic millimeter; White  
blood cells, 12,000 per cubic millimeter;  
Platelets, 150,000 per cubic millimeter.

Flück, C. (Cholesterol Infiltration of the Liver  
in the Case of a Patient with  
Cholelithiasis) *et al.* 1912

We present here the first of the  
three cases of cholelithiasis. The patient  
was a woman, 45 years of age, who had  
been suffering from the disease for several  
years. The blood count before transfusion  
was as follows: Hemoglobin, 10%; Red blood  
cells, 3,000,000 per cubic millimeter; White  
blood cells, 10,000 per cubic millimeter;  
Platelets, 100,000 per cubic millimeter.

After the transfusion of 500 cc. of normal  
blood, the patient's condition improved  
markedly. The blood count after transfusion  
was as follows: Hemoglobin, 15%; Red blood  
cells, 4,000,000 per cubic millimeter; White  
blood cells, 12,000 per cubic millimeter;  
Platelets, 150,000 per cubic millimeter.

The second case of cholelithiasis was a  
man, 50 years of age, who had been  
suffering from the disease for several years.  
The blood count before transfusion was as  
follows: Hemoglobin, 10%; Red blood cells,  
3,000,000 per cubic millimeter; White blood  
cells, 10,000 per cubic millimeter; Platelets,  
100,000 per cubic millimeter.

The author states that the transfusion of  
normal blood into a patient with cholelithiasis

is a very good method of treating the  
disease. The patient's condition improved  
markedly after the transfusion of normal  
blood. The blood count after transfusion  
was as follows: Hemoglobin, 15%; Red blood  
cells, 4,000,000 per cubic millimeter; White  
blood cells, 12,000 per cubic millimeter;  
Platelets, 150,000 per cubic millimeter.

The third case of cholelithiasis was a  
woman, 40 years of age, who had been  
suffering from the disease for several years.  
The blood count before transfusion was as  
follows: Hemoglobin, 10%; Red blood cells,  
3,000,000 per cubic millimeter; White blood  
cells, 10,000 per cubic millimeter; Platelets,  
100,000 per cubic millimeter.

After the transfusion of 500 cc. of normal  
blood, the patient's condition improved  
markedly. The blood count after transfusion  
was as follows: Hemoglobin, 15%; Red blood  
cells, 4,000,000 per cubic millimeter; White  
blood cells, 12,000 per cubic millimeter;  
Platelets, 150,000 per cubic millimeter.

W. A. C. F. M. M.

## LYMPH VESSELS AND GLANDS

H. Mann & H. Non-Tuberculous (Lymphoma  
of the Lymphatic System) 1912, 1913, 1914

Non-tuberculous lymphoma is a disease  
of the lymphatic system. It is characterized  
by the enlargement of the lymphatic  
vessels and glands. The disease is most  
commonly found in the lymphatic system  
of the neck, axilla, and groin. The disease  
is most commonly found in the lymphatic  
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and groin. The disease is most commonly  
found in the lymphatic system of the neck,  
axilla, and groin. The disease is most  
commonly found in the lymphatic system  
of the neck, axilla, and groin.

Sinuses then form from which a small amount of sticky pus exudes until secondary infection takes place

The lymph glands show local areas of suppuration walled off by granulation tissue infiltrated with endothelial cells giant cells and lymphoid cells In some areas these foci become joined and the shape of the cavity thus formed which is filled with polymorphonuclear leucocytes is somewhat stellate At times the lymphadenitis so closely resembles tuberculosis that tuberculosis cannot be ruled out definitely on the basis of the histological evidence Of two histological differences which are very constant and should suggest non tuberculous granulomatous lymphadenitis the more important is suppuration instead of caseation in the center of the

lesion Giant cells at the edge of the lesion are not so common

Hodgkin's disease is easier to rule out than tuberculosis Granulomatous lymphadenitis involves one group of glands and stops there Chronic glanders is ruled out by the absence of the glanders bacillus and the effect of this bacillus on the male guinea pig The Mallein test is also of value Chancroid syphilis and climatic bubo are other conditions that must be differentiated

Medical treatment consists in the administration of iodine iodides and emetine hydrochloride and surgical treatment in the drainage of softened areas or the removal of the entire mass of glands

The author reports four cases in which a complete cure was obtained  
CARL D. NEIBOLD M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Meyer W. The Importance of Posture in Postoperative Treatment. *Med J & Rec* 29 4  
cix 39

Of the various postures the author considers principally that which he has used for a great number of years in hospital and private work either alone or combined with others viz the slight Trendelenburg posture and Simm's posture which is sometimes exaggerated to the abdominal posture.

In Meyer's opinion the incidence of venous thrombosis following abdominal and pelvic operations which usually occurs in the left femoral vein can be greatly reduced if not entirely prevented by placing the patient in a slight Trendelenburg posture by inserting blocks under the foot of the bed. In this position the blood in the lower limbs will run down from the toes to the hips and in its onrush will easily reach the veins in the upper pelvis even perhaps the region of the renal veins from where the negative pressure in the thorax the suction of the right heart will substitute the decreasing velocity of the blood current. Meyer is convinced that this simple procedure of raising the lower end of the bed is most effective in the prevention of femoral and pelvic thrombosis. He has been using it after every operation at or below the level of the heart and in the cases of weak patients subjected to operations on the head and neck.

For many years the preventive effect of posture has been methodically supplemented in all of the author's operative cases by frequent movements particularly of the left lower limb and by deep and frequent breathing exercises during the first one or two weeks after the operation. The latter Meyer considers particularly important. In the cases of weak patients and after severe intra-abdominal and intrathoracic work a prophylactic subcutaneous stimulation of the heart muscles is induced with camphor caffeine digalen or digitalin and other preparations administered immediately after the operation and continued for a number of days. Later they are given by mouth.

Meyer insists upon Simm's position following cholecystectomy or appendectomy and after perforation of the appendix. This should be maintained for the first eighteen to twenty hours. At the end of that time a slight turning of the body to the left may be permitted. On the third day after the operation the patient may permanently take the usual position on his back. Not until the end of the third day is the foot of the bed raised on blocks. Meyer uses the Simm's posture also after the operation of gastroenterostomy and at the same time slightly raises

the head of the bed. He never keeps the head end of the bed on blocks longer than three days but keeps the foot end raised until the patient gets up. Unless there is some difficulty in urination in which case it is lowered temporarily.

Meyer combines Simm's posture with a slight Fowler or Trendelenburg posture the degree depending upon the amount of infection and extension of the intraperitoneal effusion. If the lower abdomen and small pelvis are found filled with infected fluid he makes a stab wound in both groins introduces a drain into the small pelvis and the respective lumbar region and then turns the patient upon his abdomen and slightly raises the head end of the bed. He does not believe that postoperative pneumonia is favored by the right Simm's posture employed immediately after an operation when the patient is slowly recovering from the anæsthetic. As a preventive of aspiration into the lungs as for instance in gastric lavage acute dilatation and persistent vomiting or preoperative retroperistalsis due to intestinal obstruction he believes the Simm's posture combined with a slight Trendelenburg posture is most valuable.

EMIL C. ROSSIGNOL, M.D.

Matas R. The Continued Intravenous Drip.  
*A S J* 924 LXIX 643

By intravenous drip I mean the direct administration of artificial sera drop by drop into a selected vein to restore the vascular equilibrium and rally the patient until the defensive vascular mechanism has had time to assert itself which usually requires from one to six days. It not only tends to a more rapid substitution for the primary massive intravenous infusion but is recommended as a secondary measure when the effect of the primary infusion is ephemeral.

The value of the continuous intravenous drip is especially apparent in the postoperative treatment of septic abdominal conditions in which dehydration and exhaustion preceded the operation and in cases in which the absorbent and eliminative functions have been inhibited so that supply by the oral hypodermal or gastro-duodenal cat is blocked.

As an adjunct to the continuous intravenous drip the duodenal tube is the greatest importance. In the form of the Jutte tube the drip is introduced into the stomach through the nose and in place. Though it the food constantly accumulates gastric contents are eliminated and the stomach may be frequently filled with either warm or cold water depending upon whether the patient is feverish or in shock.

Matas describes the apparatus and the technique in detail.  
SAMUEL KAHN, M.D.

# ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Brunner C. and von Gonzenbach. *Additional Experimental and Clinical Investigations on Chemical Wound Antisepsis Especially Deep Disinfection. The Acridin Derivatives Trypaflavin and Rivanol* (Weitere experimentelle und klinische Untersuchungen über chemische Wunddesinfektion speziell Tiefdesinfektion. Die Acridine Derivate Trypaflavin und Rivanol). *Beitr. H. Ch.* 1923 cx 225

On the basis of experimental investigations the authors have come to the conclusion that trypaflavin and rivanol are very valuable wound antiseptics with a markedly selective action upon streptococci but with a considerably less potent action upon staphylococci. Diphtheria bacilli, the colon bacillus and bacillus pyocyaneus are also affected by them.

The bactericidal action of both preparations is inhibited only slightly in albuminous media (serum) but is markedly inhibited by pus. Rivanol is less toxic than trypaflavin but in the animal experiments both gave protection against ground infection. Therefore they may be used both in solution and in powder form for surface disinfection of wounds but a 5 per cent solution of iodine in alcohol has proved better because of its pantherapeutic action. Destruction of all bacteria in fresh aseptic wounds by the application of a 1:1000 or 1:500 solution was impossible. If infection of a wound had already occurred the superficial disinfecting effect of rivanol and trypaflavin was no greater than that of other agents. Infections associated with necrosis were more markedly influenced by Dakin's solution.

In pus cavity joint empyemata etc the effect of the application of rivanol was on the whole the same as that in infection of superficial tissues and unlike that in deep tissue disinfection. Because of its lesser toxicity rivanol is more valuable than vuzin for deep tissue disinfection (infiltration antiseptics). A prophylactic infiltration with strong solutions of rivanol up to 1:1000 does not offer complete protection against infections of the tissues in injuries. Inhibition of the infection in cases of penetration of the tissues by anaerobic spores from the soil was observed only when strong solutions were used but it was found that the strong solutions injured the tissues often causing extensive necrosis.

In conclusion the authors state that we are still far from obtaining an ideal marked bactericidal effect with minimal tissue injury even with trypaflavin and rivanol. BODE (Z)

Monro A. S. *Gas Gangrene (Bacillus Aerogenes Capulatus) Its Recognition and Treatment. Incidence in Civil Practice in British Columbia*. *V. H. J. M. d. 1943* 31

Monro discusses the etiology, morbid anatomy, bacteriology, symptoms and treatment. The best prophylactic measure is the use of a serum containing antitoxin for the tetanus bacillus, bacillus welchii, bacillus oedematis and vibrio septique. The titer of the serum should be as high in antitoxin units as it is possible to make it.

Intramuscular injections should be given as soon as possible after the injury and in severe wounds the serum should be applied locally as well.

EMIL C. ROETISHEK, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Swann M B R : A Study of the Immediate Effects of the X Rays on the Functions of Certain Tissues and Organs *F U J R D I* 1924 25 195

Brief reference is made to previous work done by others with regard to changes in function produced by roentgen irradiation. Among the clinical phenomena recorded are burns of the skin, sterility changes in the blood picture and various degrees of constitutional reaction. The experimental results include both general effects and changes in the organs irradiated. The effects on enzyme action, kidney function and the intestines have been studied very extensively.

To add to our knowledge regarding the influence of the roentgen rays on the functions of the normal organism the author carried out considerable experimental work on cats, rabbits and guinea pigs. Unfiltered rays of medium hardness were used. The conditions under which the various experiments were performed are described and the effects of the X ray treatment on respiration, blood pressure and lung volume are shown by tracings. Attempts were made to determine the cause of certain uniformly observed effects such as the fall in the blood pressure and the changes in the respiration. The action of the rays on the smooth muscle of the bronchi and bronchioles, the autonomic nervous system, the isolated heart, the isolated and intact uterus and the isolated and intact intestine were studied at length.

The findings of these investigations are summarized as follows:

1. In intact animals the roentgen rays cause a gradual and regular lowering of the mean blood pressure and if the exposure is prolonged death from cardiac failure.

2. In the early stages the fall in the blood pressure may be due to dilatation of the arterioles and capillaries.

3. No satisfactory explanation of the fall in blood pressure is yet known.

4. Respiration is stimulated by short exposures and depressed by longer exposures; the final respiratory effect resembling that produced by morphine.

5. The stimulation of respiration is probably produced not by excitation of the center in the medulla but by increased reflexes from the sensory nerve endings of the body.

6. Constriction of the bronchial muscles has been shown to occur as the result of exposure to the roentgen rays.

7. The autonomic nerves (vagus sympathetic and splanchnic) are rendered more sensitive by

short exposures and may be depressed by prolonged exposures.

8. The roentgen rays cause the isolated rabbit's heart to die in diastole. Short exposures of the isolated rabbit's heart increase the degree of contraction; occasionally the diastole is also lengthened. Prolonged exposures dilate the coronary vessels and cause the ventricle to enter into tonic contraction.

9. After a latent period the isolated uterus of the virgin guinea pig is driven into tonic contraction. Subsequently periods of tonic contraction alternate with periods of large automatic movements. If no further exposure to the rays is given the uterus returns to an apparently normal condition.

10. For recording the movements of the uterus and intestine in the intact animal a new method was devised in which a liquid paraffin manometer was found of value.

11. Roentgen rays cause the uterus in the intact animal to enter into a series of very large contractions but the latent period is longer than in the isolated guinea pig uterus and the onset of the contractions is delayed. There is also a rise in the mean tone. After the radiation is stopped the tone of the uterine muscle and the axis of the contractions do not approach the normal for a period of hours.

12. Roentgen rays cause the tone of isolated rabbit's intestine to rise steadily to an excessive degree. The effect resembles that produced on pig muscle by drugs such as lead or barium.

13. In the intact animal (cats and rabbits) the roentgen rays produce an increase in the intestinal movements and a slight rise in tone. In the cat the rise in tone may be marked. When the radiation is stopped there is a gradual diminution in tone.

14. It is not yet possible to say whether the action of the roentgen rays is exerted directly upon parasympathetic muscle or upon the autonomic nerve endings in the muscle. (WOLFE HARTUNG M.D.)

## MISCELLANEOUS

Keller P. On the Action of Ultraviolet Light on the Skin with Particular regard to Dose. (Zeitschrift für klinische Medizin) 1911 11 115. (Haut i. besond. B. ruck. h. gu. g. der Dosierung) *St. J. d. d. d. p. 9 3 11 5*

To estimate the value of the three most important methods of measuring the dosage of ultraviolet light—the Bernig Meyer iodine method, the Eder Hecht method and the Fuertstenau a tinometer—the author attempted to determine how reliably the measurements agreed with the strength of the biological reaction measuring only that part of the rays which produces erythema (according to Huser) and visible wave lengths of about 300 microns.

While it is still an open question which part of the spectrum is most powerful in the production of biological reactions it is generally recognized that the curative action of light runs closely parallel with the degree of erythema (Rost). Accordingly the Fuerschmann actinometer is unreliable as it includes too many rays under 300 m $\mu$  a fault which Wood's filter and Axmann's screen do not correct. The same fault is found in the Eder Hecht method.

The author modified the Bering Meyer test by adding starch and sodium thiosulphate to the potassium iodide solution thereby immediately binding the iodine which is split off instead of titrating the iodine at the end of the radiation as proposed by Benning and Meyer.

Comparative biological measurements showed that the results of this measuring technique agreed sufficiently well with the phenomena on the skin in contrast to the results obtained with the three other methods which were sometimes extremely misleading. As the course of the new reaction depends strictly on the size and surface of the vessel containing the fluid the concentration of the iodide of potassium solution the acidity and the amount and concentration of the added sodium thiosulphate the measurements must always be made under similar conditions. The skin reaction and measure-

ment agree best when 1 ccm of N/400 sodium thiosulphate is added. The measurements are made at one fifth the focal skin distance.

With the filter differential method it was determined that the reaction is caused chiefly by the short wave ultraviolet ray. Hence when violet blue glass filters are used the erythema dose lies above the Alpine sun unit. Attempts to shorten the reaction time by catalyzers were successful only for rays that passed through the glass. Since the quartz lamp is not a punctate source of light the law of dispersion applies to it only at a distance of 20 cm or more.

With regard to the question as to whether the Bunsen Roscoe reciprocity rule or the Schwarzschild law holds good for light from a quartz lamp the author's method of measuring demonstrates that the dose is the product of the intensity and duration of application of the light and that a Schwarzschild exponent for the differences in intensity noted cannot be assumed. The rays producing erythema are not filtered out electively through 1 meter of air.

The new technique described by Keller is an improvement on the original method because the sensitivity of the latter to rays producing erythema is decreased by the iodine which is split off during the application of the light. Dietl (G)

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# INTERNATIONAL ABSTRACT OF SURGERY

DECEMBER 1924

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### EYE

Sheard C Applications of a Fundamental Mathematical Equation to Ocular Refraction and Ophthalmic Lenses *Am J Ophth* 9 4 33 1 39

This article establishes the general applicability of a single mathematical equation to the determination of the effects of changing positions, curvatures and thicknesses of lenses as used in ophthalmic practice or worn by the person for whom they were prescribed. The fundamental formula presented for consideration is  $C=k \times D^2$  in which  $C$  represents the change in effectivity or vertex power expressed in diopters and  $k$  is a constant or multiplying factor with a value of 0.001 when  $s$  the distance is expressed in meters.  $D$  represents the specified dioptric power of the lens.

After discussing the meaning of the expression change in effectivity and illustrating his statements with diagrams Sheard proceeds to show the universality of application of the formula to (1) calculation of the effects of changing the position of a single lens before the eye (2) the effect of a change of position of a lens in the trial frame or other refracting instrument (3) the amount of hyperopia or myopia corrected by a given lens (4) the effects of thickness and curvature upon the effective or vertex powers of lenses and their neutralization values and (5) the vertex or effective powers of contact lenses.

The portions of the article which deal with the determination of the refractive equivalents or frame powers of modern ophthalmic lenses and in particular with the calculation of the vertex powers of lenses prescribed in postcataract cases should prove of special interest to ophthalmologists. Meniscus forms of lenses with varying base curves used for the purpose of giving wide angle fields of undistorted vision are compared as regards their effective powers with the biconvex and biconcave trial case lenses. The article includes tables showing the

effective powers of cataract lenses ground with various curves. These calculations show the difference between the frame power and neutralization values of different types of lenses. Several diagrammatic illustrations and a number of numerical examples emphasize the points presented. The acceptance of the fundamental formula and an appreciation of its significance in refractive problems should prove of considerable value since it removes some of the outstanding difficulties in modern ophthalmic lens theory and practice.

Johnson F M The Treatment of Carcinoma of the Conjunctiva with Radium *Am J Ophth* 9 4 33 61 589

The usual treatment of carcinoma of the conjunctiva has been excision with local cauterization, enucleation or exenteration. The author reports on cases treated by unfiltered radiation which seem to prove that this method is preferable to surgical removal as the latter may spread the disease. Four of the cases had been operated upon and had developed a recurrence. After radiation there was only one recurrence near the site of the original tumor. In one case the eye was removed elsewhere before the completion of the treatment and a recurrence developed in the soft tissue of the orbit.

VIRGIL WESCOTT M D

King C The Use of the Simplified Gullstrand Diaphragm Ophthalmic Lamp in Current Clinical Practice *Okla Stat M J* 9 4 xx 58

The author advocates the simplified form of the Gullstrand diaphragm lamp for daily current clinical work not only for external examination but for ophthalmoscopy for transillumination of the media for transillumination of the eyeball and especially for retinoscopy.

A dental bracket is substituted for the heavy metal based tripod to insure easier manipulation and several tubes are supplied for transillumination, retinoscopy and ophthalmoscopy.

In local illumination the modified lamp gives a concentrated light with a surrounding area of darkness. With this lamp and the ophthalmoscope of the Cull transfer apparatus very fine opacities can be seen by the light reflected from the fundus. The author states that the diaphragm lamp of Cull transfer more nearly fulfills the conditions of accuracy as laid down by Jackson than any apparatus hitherto available. By means of a centric and eccentric retinal ophthalmoscope according to the technique of Cull transfer it is possible. The attachment of a central tip permits transillumination of the eyeball through the iris or sclera. (Lancet, W. Scott, M.D.)

### NOSE AND SINUSES

Shambaugh, G. F. Observations on Some of the More Recent Problems in Rhinology. *N. Y. Med. J.* 1924, vi, 47.

After referring to the unwarranted belief held in the eighties that every case of asthma was etiological to some nasal condition—a belief based on the associated palpable changes in the nasal cavities—the author draws attention to certain recent unwarranted claims concerning the nasal origin of headaches, sphenoidal pain, trigeminal neuralgia, and involvement of the optic nerve. A peculiar case in which there are no associated demonstrable changes in the nose or sinuses. Shambaugh is more inclined to attribute the latter condition to some focal infection.

(Orr, M. R., M.D.)

Turner, A. J. The Relation of Visual Disturbances to Affections of the Posterior Sinuses. *J. Laryngol.* 1924, xxi, 371.

Syme, W. S. The Sphenoidal Sinus and the Optic Nerve. *J. Laryngol.* 1924, xxi, 375.

Young, C. Retrobulbar Neuritis of Sinus Origin. *J. Laryngol.* 1924, xxi, 375.

Traquair, H. M. The Value of Visual Changes in the Diagnosis of Optic Nerve Disease Due to Latent Morbid Conditions of the Nasal Accessory Sinuses. *J. Laryngol.* 1924, xxi, 384.

Donald Grant, Sir J. Cases of Ocular Disturbances Attributed to Nasal Disease with Recovery or Improvement Following Intranasal Operative Measures. *J. Laryngol.* 1924, xxi, 397.

The papers were read at a joint discussion held by the Scottish Society of Otolaryngology and the Scottish Ophthalmological Club at Edinburgh on the relation of visual disturbances to affections of the nasal cavities and the posterior group of sinuses.

Turner opened the discussion by calling attention to the fact that as yet no satisfactory explanation has been offered regarding the relationship of a certain group of nasal and ocular conditions and that the ophthalmologist is unable to give a definite clinical picture of the type of case which will be relieved by nasal intervention. The difficulties of the ophthalmologist are still further increased by the fact that

improvement or a cure of the visual condition may immediately follow the opening of the sinuses when the eye changes are undoubtedly dependent upon an entirely different cause such as disseminated sclerosis in which the eye phenomena are merely a prodromal sign of that disease. Moreover, in some cases the rhinologist is unable to say whether the posterior sinuses are diseased or not.

Turner believes that reported cases of ocular disturbance which improved after operation on apparently healthy sinuses might have improved as well after nasal treatment and he fears the danger of promiscuous operations on normal sinuses. As the teeth and tonsils are possible offenders, he suggests that the ophthalmologist ask for a nasal and roentgenographic examination of all his cases of optic neuritis whatever the cause suspected that the neurologist similarly submit his cases of disseminated sclerosis for examination and that the laryngologist and roentgenologist make a series of observations on the nasal and sinus condition of a series of patients without visual disturbance.

Syme detailed the results of his anatomical investigations concerning the sphenoidal sinus in relation to the optic nerve showing thereby the vulnerable position of the optic nerve in the presence of supratentorial and posterior ethmoidal disease. He said it is common particularly the type characterized by polypoidal degeneration of the lining membrane.

The optic nerve changes noted by Syme were congestion of the disks and optic neuritis. The nerve may become affected through toxæmia, direct propagation of the inflammatory affection of the sinus by way of the thin bone or by way of the strands of the optic nerve and small vessels which Syme has demonstrated by direct extension through the root tract and by direct absorption of the products from the sinus through the roof and lateral walls into the arachnoid cavity and by this route to the nerves.

He said of the difficulty in making a diagnosis of sphenoidal disease in the latent stage. Syme believes we are just beginning to open up the sphenoid at the request of the ophthalmologist even if definite clinical signs are absent and certainly without reference to the X-ray findings.

Young believes that sphenoidal sinus disease particularly of the non-purulent type may cause retrobulbar neuritis and feels justified in opening the sphenoid in cases of retrobulbar neuritis if there is a suggestion of growth in the upper and posterior part of the nose—growing by the septum or by an enlarged or unhealthy turbinate. This is a course premised that the potentially causative agents have been eliminated.

Traquair divided the visual changes which may be of aid to the diagnosis of optic neuritis due to latent morbid conditions of the nasal accessory sinuses into two groups.

1. Changes reported in patients whose symptoms brought them first to the ophthalmologist and who were

then passed on to the oculist with a diagnosis of suspected or demonstrable sinus disease. As a rule the visual changes are not complained of by the patient but are found on examination. Enlargement of the blind spot and contraction of the field are mentioned but very little significance is attached to the latter.

2. Changes found by the oculist in patients who complain of visual symptoms or headache and in whom sinus disease is discovered subsequently by the rhinologist. In this group the essential feature is a scotoma of the central part of the field which involves the fixation point. An associated motor defect extending to the periphery may or may not be present.

Traquair believes that it is possible to ascertain something as to the site and nature of the causal lesion by a rational interpretation of the field defects but the history, the general condition of the eye, the patient's sex, the mode of onset of the ocular complaint and the associated symptoms must also be considered and the progress of the case must be watched indefinitely. Traquair regards as unduly pessimistic Van der Hoeve's statement that the ophthalmologist cannot say whether an optic nerve disease is of nasal origin or not.

DEWEY GRANT presented notes of cases of ocular disturbance attributed to nasal disease in which recovery or improvement followed intranasal operative measures. There were two cases of retrobulbar neuritis which subsided after the removal of the middle turbinate body, one case of retrobulbar neuritis which subsided after drainage of the sphenoidal and posterior ethmoidal cells, one case of papilledema and one of optic atrophy with improvement of vision after middle turbinateotomy, and one case of keratitis profunda with improvement after middle turbinateotomy and drainage of the ethmoid.

OTTO M. ROTT M.D.

TRIBLE G. B. Sinusitis from the Standpoint of the General Practitioner. *J. S. M. W. H. 94*

1104

The author directs the attention of the general practitioner to cases of headache, neuralgia, and obscure eye discomfort in which sinus disease may be the etiological factor. He then discusses how a diagnosis of sinus disease is made by the rhinologist and reviews the accepted method of treatment for operations on the ethmoid and sphenoid he refers to the Sluder technique.

OTTO M. ROTT M.D.

WOODMAN M. GARDINER W. T. GUTHRIE D. and Others. Discussion on Suppurative Diseases of the Frontal, Ethmoidal, and Sphenoidal Sinuses. *Proc. R. Soc. Med. Lond.* 924 111. Sect. Laryngol. 69.

WOODMAN stated that the frontal sinus resembles the gall bladder in that both are drained at their lowest parts by ducts that lead to larger cavities and their discharges are dependent largely on muscular contractions within and on the ducts.

A serious complication of frontal sinus operations is osteomyelitis. This is favored by the free anastomosis between the angular veins, the superior longitudinal sinus and the emissary veins of the meninges.

Of the types of external operation Howarth's procedure through the floor is the best as it is less apt than the others to be followed by osteomyelitis.

The ethmoid being a spongy bone is a source of permanent and latent infection. Infection spreading up the nose leaves infective organisms in the cell when it recedes.

Frontal sinus suppuration does not often cause generalized meningitis.

It seems probable that cavernous sinus thrombosis arises primarily from the ethmoid not from the sphenoid and that the best treatment would be to begin a complete extirpation of the ethmoid sphenoid on one side and so to approach the cavernous sinus and turn out the clot.

With regard to operation on the sphenoid Woodman raised the question as to the desirability of removing all of the ethmoid cell or opening up only a few.

The importance of the sphenoid lies in its relationship to the optic foramen and the vidian canal.

In conclusion Woodman referred to the connection of the sinuses to the pituitary and suggested that in view of the permeability of the sphenoidal sinus to drugs the pituitary may be affected by a sphenoidal condition.

GARDINER gave a lantern demonstration showing the step of the Sluder method of opening the ethmoid and sphenoid intranasally.

TURNER gave a demonstration of specimens and showed lantern slides illustrating the variations in the cribriform plate and its relation to the upper nasal sinuses.

TILLEY stated that the danger of osteomyelitis can be minimized by avoiding the use of sharp curetting instruments at the juncture of the anterior and posterior walls. The sinus should be irrigated and the infected tissue gently removed with small gauze swabs. In some cases however osteomyelitis may occur without any operative trauma. Tilley believes that sphenoidal sinus suppuration is very common.

WATSON WILLIAMS said that usually a chronic frontal sinus disease can be relieved by a prenasal operation establishing free drainage but that there are some cases with pockets which fail to drain into the nose.

TURNER presented statistics on intracranial complications. Of 125 of these seventy-seven were spontaneous and forty-eight postoperative. The frontal sinus was responsible in forty-one cases, the sphenoid in nineteen, the ethmoidal in nine and the maxillary in two. Of the postoperative complications 89 per cent followed chronic sinus infection and 10 per cent an acute infection. Osteomyelitis occurred in 38 per cent of the cases operated upon in ten of the twenty-two cases of intranasal opera-

tion and in eighteen of the twenty six cases of extranasal operation

CINN told of a case of supra orbital neuritis of frontal sinus origin

THOMSON spoke of the danger of causing a fatal meningitis by opening into the cerebral cavity through an infected nose

SMYR stated that he prefers the external method of operating on the frontal sinus. He is not satisfied with Stoker's procedure on the ethmoid and sphenoid. In fact he uses Lach's method introducing a Mure ring curette under the cribiform plate well back and then working forward and forward removing the middle turbinate opening up the ethmoidal cells and passing into the sphenoidal sinus through the external angle of the anterior wall

DICKINSON said that operation is often performed too soon in these conditions. He reported a case of meningitis following the removal of polypoid ethmoidal curetting which he believes might have been avoided by preliminary cleansing for a few days

DAWSON reported a similar case

HORLEY stated that the Stoker operation is based on an erroneous principle. In his opinion intranasal sphenoidal operations are inefficient because they require the sacrifice of more or less of the turbinate bodies and make it necessary to work with mucous membrane in a field which is somewhat obscured by hemorrhage and at a greater distance than by the transnasal method which he has adopted. He opens the ethmoidal sinus at the posterosuperior internal angle of the nostril with Lucas forceps directing the forceps toward the partial protuberance on the other side of the head. The sphenoid can be opened externally to the sphenoidal recess. He usually attacks the middle turbinate but if it is grossly diseased he removes it as the last step of the operation

OTTO M. ROY M.D.

Woodman, E. M.: Suppurative Disease of the Upper Nasal Sinuses. *J. Laryngol. Otol.* 1924 35: 3/5

Among the complications of suppurative disease of the frontal sinus are frontal lobe abscess and meningitis. Woodman attributes the occurrence of osteomyelitis after operation to the fact that the frontal sinus is situated within the diploë of the frontal bone surrounded by diploë veins fed by a network of external vessels and connected with the origin of the superior longitudinal sinus and the foramen cecum by emissary veins. All of these are factors favoring rapid spread of infection. Venous drainage is slow.

When an external method of operating on the frontal sinus is indicated Woodman prefers Howarth's modification of the Killian operation in which the sinus is opened through its floor.

The ethmoid Woodman compares to a sponge. Infection from the nose fills up the air cells with fluid and then receding leaves them full of latent infection or active suppurative. Divided equally



Fig. 1. Transverse section through the nose showing the relation of the sphenoid especially of the ethmoidal sinus to the orbit and the nasal cavity.



Fig. 2. A view of the lateral wall of the nose showing the relation of the sphenoid to the ethmoidal sinus and the anterior wall of the orbit.

by a shelf-like partition the antero-inferior portion controls the antrum and the entrance to the frontal duct while the posterior superior part is closely related to the sphenoidal ganglion and controls the pharyngeal sinus.

The relation of the ethmoid to the meningitis through the thin portion of the cranial floor which forms the roof of the ethmoid and through the cribiform plate must be further studied. Important facts would be learned from careful microscopic and macroscopic examination made in a large number of fatal cases of meningitis of the upper sinus and of sections of the sinus walls and of the bone lying between the ethmoidal meninges.

A connection between the sphenoidal ethmoid and the sinus through the middle ethmoidal foramen is probably



Fig 3 Photograph of the ethmoid bone from the upper aspect showing the cribriform plate with its numerous perforations for olfactory nerves and the passage between the anterior fossa and the nose



Fig 4 Horizontal section of the base of the skull showing the removal of the cribriform plate and the capsula of the ethmoid sinus. On the right half of the orbit has been removed to show the internal carotid artery. The carotid artery is also seen.

able the anastomoses being so tenuous and the vascularity of the spongy bone is great.

The rational treatment of cavernous thrombosis is a radical spheno-ethmoid operation but unfortunately the cases reach the surgeon too late.

The connection between the suppurating ethmoid and neuralgia must also be borne in mind. The pain is described as being deep in the head between the eyes and sometimes on the temples.



Fig 5 Horizontal section of the nose and orbit showing the location of the ethmoid and frontal sinuses to the eye and to the pull of the superior oblique muscle on the eyeball.



Fig 6 Specimen illustrating the sphenopalatine ganglion and its relation to the tubular bones and the ethmoid. The vidua and deep sphenopalatine nerves are also visible.





function is correct it follows that in an definite case of hyperthyroidism the saturation of the thyroid cells with iodine will intensify the condition and conversely that in any case in which the thyroid can take up iodine metabolize it and store it in the colloid to its maximum capacity without any alteration in the rate of heat production in the body (the thyroid) functioning normally.

On the basis of these preliminary studies the authors feel justified in pursuing further the conception that the response of the organism to the administration of iodine may prove a dependable aid in the differential diagnosis of doubtful cases presenting symptoms characteristic of mild hyperthyroidism.

STANLEY J. SIEGER, M.D.

#### Hamilton, B. E. Heart Failure of the Congestive Type Caused by Hyperthyroidism. *J. Am. M. A.* 1914, 1: 42.

True heart failure of the congestive type is found commonly in very few diseases. It is the usual terminal picture in rheumatic heart disease and fairly common in cardiovascular syphilis. In heart changes associated with arteriosclerosis and in conditions associated with prolonged hypertension.

Toxic states referable to the thyroid gland cause marked disturbances of the heart. It has been stated that when patients with hyperthyroidism die they die of heart failure. Such a statement is not valid unless a clear definition of heart failure is made and adhered to. All patients with hyperthyroidism suffer from dyspnea and tachycardia which limit their activity to some degree but only a small number have true heart failure.

The author has studied the hearts in all cases of suspected thyroid disease in Lakeside Clinic in the last four years. He has found no significant heart changes attributable to thyroid disease either in doubtfully toxic or in definitely non-toxic cases. Individual cases may show cardiac changes of various kinds but this is to be expected in any large group of adults with an average age close to 40 years.

In the definitely toxic cases significant heart changes were found in about 35 per cent. The first significant heart change is auricular fibrillation. This is at first transient but tends to become established if the hyperthyroidism remains unchecked. If the hyperthyroidism is relieved during the stage of transient attacks the condition permanently disappears in nearly every case. Similarly in many patients who are in the clinical stage of established auricular fibrillation normal rhythm returns permanently.

In 100 cases of thyroid disease with some degree of toxicity the author found fifty with signs of true congestive heart failure due to hyperthyroidism. With a very few exceptions the histories of these fifty cases show predominance of symptoms referable to the heart from early in the course of the disease. This agrees with the clinically recognized selective action of hyperthyroidism so certain heart action of these cases as a diagnostic aid is treated for

a long period as cardiac cases the underlying hyperthyroidism being overlooked.

The fact that hyperthyroidism is one of few conditions that tend to cause congestive heart failure demands its consideration in any case in which the cause of the cardiac failure is not obvious. Elevation of the basal metabolism may be of considerable confirmative value but readings as high as +64 do not prove a hyperthyroidism and estimations at least as low as +16 do not exclude it. The diagnosis depends rather on the careful evaluation of direct physical signs than on repeated indirect tests. These include auricular fibrillation transient or established and pigmentation. There must be also emaciation or a history of a decided loss of weight.

The condition occurs usually in women over 35 years of age. Exophthalmos though of diagnostic aid is found not commonly present in this group of cases. An elevation of the heart rate in spite of rest and digitalization is a valuable sign but a slow heart rate does not exclude hyperthyroidism. Congestive failure in spite of medical treatment directed to the heart is to be expected.

The fifty patients whose cases are reviewed were given medical treatment including thorough digitalization. Only eleven lost all gross signs of true heart failure. All were operated upon. One died twelve hours after the operation. The others survived the operation but four have died since. This cannot be cited. The result in the remaining cases has been very favorable. The patients with transient attacks of auricular fibrillation have ceased to have attacks. In at least one third of those with established auricular fibrillation there has been a return to normal rhythm.

STANLEY J. SIEGER, M.D.

#### Bircher, E. The Pathology of the Thyroid III. Experimental Basedow's Disease and the Relation of the Thyroid to the Thyroid Gland. (*Zur Pathologie der Thyreoid III. Experimenteller Beitrag zur Basedow'schen Krankheit*) *Dtsch. Ztsch. f. Chir.* 1913, 11: 20.

The author first touches briefly upon the combined influence of various glands of internal secretion on the origin of Basedow's disease when a constitutional predisposition to the condition is present. In animal experimentation the predisposition cannot be determined it is covered by chance. In 1912 Bircher reported experiments in which he produced the complete picture of Basedow's disease in dogs by the implantation of thyroid. In the choice of the dogs pains were taken to select first those of an excitable and restless type and second those in which inbreeding had caused degeneration of the nervous system. Most of the animals were females. It was found to be of importance whether the implantation material was taken from the pathologically altered thyroid gland of a person with Basedow's disease or from a healthy child. The experiments are reported in detail with illustration.

Following the implantation a decided increase in the frequency of the pulse and an increased cardiac apex beat were noted. In three cases the eyes were distinctly lustrous. In two cases there was a lymphocytosis with leucopenia. After the tenth to twelfth day there appeared a distinctly defined struma of soft consistency. Distinct nervous disturbances were also present. In three cases the picture was very marked; in three others the symptoms were present but not marked. The three marked cases were cases in which the implant was a large piece of the thymus gland from an adult who had died a thymic death. In the three other dogs a small piece of thymus from a child was implanted. The positive results are therefore to be ascribed to the very pathologic transplanted material which caused a pronounced hyperthyrmization.

The implantation of the thymus introduces into a body not prepared to resist it toxic materials of an altered and increased thymus secretion. There then develops an intoxication with alteration of the internal secretion (enlargement of the thyroid gland, changes of a hypoplastic nature in the suprarenal glands). This is a proof that the thymus influences the endocrine system and supports the theory of a thymogenous Basedow's disease. The rôle of the thymus like that of the thyroid is secondary; the primary rôle is played by the constitutions.

The clinical results obtained have received strong support from the histological picture of some of the glands of internal secretion. The histological picture of the thyroid gland showed it to be rich in follicular tissue with cylindrical, in places many layered, colloid, numerous filitric tubules and a large amount of solid gland tissue. Desquamation was also observed but only a relatively small amount of colloid was present. The suprarenal glands showed complete hypoplasia of the medullary portion, almost an aplasia with connective tissue proliferation. In two cases the pancreas presented the picture of atrophy and a remarkable reduction in the islands of Langerhans and the spleen showed a decrease in the number and size of the follicles. Therefore the entire lymphatic system was considerably influenced.

In two cases the transplant was taken from persons 28 and 25 years of age respectively. These two transplants showed considerable cortical hyperplasia with signs of beginning involution. On thymus taken from a child showed marked medullary hyperplasia.

Further research is necessary to determine whether there is any connection between these experimentally produced cases of Basedow's disease and the picture of thymic death occurring suddenly after operation in Basedow's disease.

To obtain a distinct picture of hyperthyrmization the entire thyroid gland was extirpated from animals into which thymus had been transplanted. All three animals died after from eight to ten days with symptoms of cardiac insufficiency, a rise in the pulse rate to 200. In healthy dogs the extirpation of the thyroid led to a gradual decline over a period

of a year. The supposition that the condition which developed in the experimental animals after the extirpation of the thyroid was true hyperthyrmization is supported by the experiments of Ivchla with the injection of juice expressed from the thymus. The effects of hyperthyrmization are explained by direct action on the vascular system but chiefly by indirect action on the organs of internal secretion. It is to be assumed that the thyroid exercises a stimulating influence on the suprarenal glands whereby the reaction against hyperthyrmization is increased. After complete removal of the thyroid this stimulating influence is not present and the thymus secretion has a free path for its deleterious influence on the vascular and nervous systems.

On the basis of twenty-four cases with goiter the author discusses the coincidence of enlargement of the thymus and of the thyroid and the relations of the one to the other. He comes to the conclusion that persistence of the thymus is a relatively frequent finding in endemic goiter, particularly in struma diffusa. A definite influence of the thymus on the changes in the goiter could not be determined in the experiments reported. HAGAGA 7 (2)

Holmes G W, Mean J H, Porter C A, Richardson E P and Starr M P. On the Treatment of Exophthalmic Goiter. *Bull. M. & S. J.* 1924 ccl 295.

In the authors' opinion the best treatment for exophthalmic goiter is iodization followed by subtotal thyroidectomy while the metabolism is normal. The x-ray still has a place in the treatment when operation is under consideration, but the patient when iodine has not been found to contribute to the success of irradiation. The methods of applying irradiation are still more or less in the experimental stage.

In conclusion the authors emphasize that the use of iodine is essentially a measure preparatory for operation, not a curative measure. Iodine should be given only when operation is to be performed immediately afterward. The time of operation should be selected with care as it may be impossible to obtain an iodine remission in a season or at least not until after a long period without iodine.

A. THUR. L. S. & FLEET M.D.

Young T O. A Consideration of Postoperative Complications Following Thyroidectomy. *Ill. Med J.* 1924 94 154.

The present-day interpretation of surgical complications following thyroidectomy is radically different from that of ten or fifteen years ago and especially that of complications causing interference with respiration. It is known that practically all of the latter are due to injury of the recurrent laryngeal nerve or pressure on the trachea from clot formation in hemorrhage. Many surgical complications do not markedly affect the mortality rate since they are promptly recognized and treated. The most serious of the complications from the standpoint of the patient's future well-being is that of the mortality

is injury to the recurrent laryngeal nerve. Accurate checkup by laryngoscopic examination is the only method of determining the degree and type of involvement of the vocal cord on this the prognosis depends.

**Kreke A.** The Treatment of Postoperative Tetany by Transplantation of the Parathyroids of the Horse (*Ueber die Behandlung der postoperativen Tetanie mit der L. berpflanzung an Pferdeherthelkörperchen*) *Zentralblatt für Chirurgie* 1914 41:39

Since all the parathyroid cannot be removed from living men and as the removal of even one may cause tetany a substitute must be found for them. The most suitable substitutes are the parathyroids of the horse as they are very large and fairly easily found. To date the author has treated five cases of postoperative tetany by the implantation of the parathyroid of the horse. Three are entirely cured and two of the cures have lasted for one and one half years.

Case 1 was that of a 14 year-old girl who exhibited marked tetany on the fourth day after bilateral strumectomy with ligation of all four vessels. The implantation was done eight days after the operation. The patient was free from convulsions the following day and has remained well to date.

Case 2 was that of a boy 17 years old who was subjected to the removal of a medium sized bilateral goiter. Tetany appeared the day after the operation. Twenty days later as the attacks were becoming more severe two parathyroids were implanted. The implantation was followed by immediate improvement and the resulting cure has continued to date.

Case 3 was that of a 50-year old woman subjected to resection of both lobes of the thyroid with ligation of all four vessels. Tetany began on the 15th day after the operation. Following transient improvement recurrence of the attacks led to the implantation operation about 1 month later. The patient has now been cured for a period of eighteen months.

Case 4 was the case of a 28 year-old woman. The left lobe of the thyroid was removed first and subsequently the right lobe was resected. Tetany developed four days after the second operation but was overcome to some extent by the usual treatment with calcium and afein. Late the tetany recurred. Since the implantation operation there has been no further serious trouble.

Case 5 was that of a 31 year old woman who was subjected to bilateral resection of a medium sized struma in 1917. The inferior vena cava was not ligated. Mild attacks of tetany began the fourth day after the operation and gradually became more severe. Early in 1923 the implantation of two parathyroids was done but was without effect.

The parathyroids implanted were removed sterile at the slaughterhouse and embedded under local anesthesia in the preperitoneal tissue between the umbilicus and the navel. *VON TAPPEINER (2)*

**Kramer R. and Yankauer S.** Lymphangioma of the Larynx *Laryngoscope* 1924 XXXIV 62

Lymphangioma of the larynx is a rare condition only ten cases having been reported.

This type of tumor occurs more frequently in the tongue lips neck extremities and sacral region. Four types have been described the simple cavernous hypertrophic and cystic.

The underlying cause of lymphangioma is unknown. A large number of the growths are of congenital origin but some do not appear until adult life.

Kramer and Yankauer report two cases of lymphangioma of the larynx proved by microscopic examination. One of the patients was not seen again after the removal of the growth. The other has been free from recurrence for seven years. In both cases the growth was removed with cutting forceps by indirect laryngoscopy. The choice of the method must be determined by the size of the tumor and the nature of its attachment.

JAMES C. BRASWELL M.D.

**Pentecost R. S.** Tuberculosis of the Larynx—Its Diagnosis and Treatment *Clinical Medicine* 1914 XI 674

Pentecost urges closer co-operation between the physician and laryngologist in cases of tuberculosis of the larynx.

As early recognition of tuberculous involvement of the larynx is most desirable regular laryngological examination should be made in all cases of pulmonary tuberculosis.

The policy of *laissez faire* should be replaced by active local treatment.

In a large percentage of cases of laryngeal tuberculosis the condition may be completely arrested by (a) hygienic and dietetic treatment (b) absolute vocal rest (c) appropriate treatment of any associated pathological condition in the upper respiratory tract (d) heliotherapy and (e) the application of the galvanocautery to the affected areas in the larynx.

In the use of the galvanocautery the author uses the indirect method puncturing in two or three places on one side of the larynx. After a period of a week or ten days he treats the other side similarly.

As to the results he says: "Provided the patient's general vitality and nutrition are fairly good 75 per cent of cases of laryngeal tuberculosis in the incipient or moderately advanced stage can be completely arrested and 90 per cent can be materially improved by the employment of the cautery in local treatment."

OTTO M. ROTT M.D.

**Strandberg O.** Injury to the Larynx Induced by X-Ray Treatment *Laryngology & Otology* 1924 XXXIX 437

The author reports the case of a patient who was given X-ray treatment for lymphoma in the front of the neck and became hoarse. Eight months after the last X-ray treatment he complained of pain in

the throat and dyspnea. The cause was believed to be tuberculosis of the larynx but on examination no evidence of tuberculosis could be found. Histological examinations of several pieces of the mucous membrane of the larynx showed no tuberculosis or cancer but revealed changes due to the X rays.

Injuries to the larynx caused by the X ray vary in character. The early reaction may appear from one to three days after the treatment. The true X ray reaction of the larynx appears from ten to twenty days after the beginning of the radiation. The edema may be serious but as a rule disappears within from ten to fourteen days. The late reaction of the larynx may be considered very serious. It is not possible to say how long after one or several irradiations the third reaction may appear. The late reaction will be found in the muscles, perichondrium and glands whereas the early reactions appear in the skin and subcutaneous tissue. The late reaction may not be preceded by other reactions.

JAMES C. BRASWELL, M.D.

Novak F. J. Jr. Cancer from the Standpoint of the Otolaryngologist. *W. J. B. S. J.* 1924. 1: 30.

Prevention of cancer of the larynx is based on the elimination of the causes of chronic irritation by proper vocalization, periodic rest of the voice, the elimination of chronic suppurative posterior paranasal sinus disease, the removal of diseased tonsils in persons of cancer age, and proper management of syphilitic lesions of the larynx.

In the treatment of the cancer itself, Novak prefers surgical diathermy, otherwise known as electrocoagulation, to the usual surgical methods because he believes that in the field of otolaryngology it is mechanically impossible to remove the regional lymphatic structures completely. The method he employs is described as follows:

Two electrodes are used. One of them a very large indifferent electrode is applied to the patient's back. The other a small button or ball electrode is applied successively to various parts of the tumor. Sufficient current, usually about 1,300 ma., is used to coagulate a portion of the growth about the size as large as the small electrode in about twenty seconds. The electrode is then moved to an adjacent part of the tumor and the process repeated.

When the entire tumor is coagulated, the rostrum is removed by curettage and the site of the neoplasm is again heated through for a period of five or ten minutes. During the second heating the temperature is not raised sufficiently to cause coagulation. The anesthetic of choice is chloroform.

Diathermy followed by radiation has the following advantages:

1. There is no dispersal of metastases.
2. It is a simple and bloodless procedure.
3. It removes the tumor as completely as surgery.
4. The radiating heat from the field of coagulation exerts an inhibitory effect upon the vagrant neoplastic cell in the periphery of the tumor.

OTTO M. ROHR, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Lockyer C Holland E Cameron H C and Others Discussion on Birth Injuries with Special Reference to Intracranial Injuries with Haemorrhage and to Nerve Injuries *Proc Roy Soc Med Lond* 1924 xvii S t Study D 3 Child. Neurol Obst & Gynaec and O thop 2

With a summary of the work of Spencer on visceral haemorrhages in stillborn children based on 130 autopsies the authors presented a symposium on birth injuries

HOLLAND reported that in a series of neonatal deaths and stillbirths cerebral haemorrhage occurred in 55 per cent Subdural haemorrhage was the most common type and the ventricular and intertubal types were next in order

Cerebral haemorrhages of traumatic or asphyxial origin In the former there is usually tearing of the tentorium cerebelli or falx cerebri from excessive elongation of the head in the vertical direction as in vertex and breech presentations While haemorrhage is frequently found at the site of the tear this is not always true and in itself the bleeding may not be particularly serious Rupture of the tentorium cerebelli however removes the chief restraint to excessive molding of the head so that rupture of the cerebral veins as they enter the longitudinal sinus or the vein of Galen is favored Infants dying of asphyxia may show cerebral haemorrhage and in addition multiple petechial haemorrhages on the surface of certain organs such as the lungs liver and thymus

CAMERON stated that subdural haemorrhage in the newborn may supervene in or after a normal labor as well as after precipitate labor With bulging of the fontanelle there is increased pressure of a blood uncted spinal fluid and in nearly half of the cases of subdural haemorrhage or more rarely oedema of the disks Increased rigidity and spasticity of the limbs and convulsions of a general or local type are common Interference with respiration is the rule

While in the light cases in which the diagnosis of subdural haematoma was made were all fatal it seems certain that haemorrhages of lesser extent may not cause death The sensorium tor de elopment in these cases is markedly retarded but the ultimate loss may not be so great The majority come under treatment for the spastic condition of the limbs

COLLIER commenting on the observation of Cameron that oedema of the disks occurs in subdural haemorrhage stated that he had never seen optic neuritis until the skull was closed

The postmortem findings do not support the belief so long held that all infantile hemiplegia and

diplegic spastic states dating from birth are due to meningeal haemorrhage With Little Collier believes they are the result of asphyxia neonatorum which causes small haemorrhages throughout the nervous system with subsequent sclerosis and atrophy However 60 per cent of all spastic states dating from birth have a history of some abnormality in the process of birth Today the cerebral defect and abnormal labor are looked upon as the expression of a deep pathological influence at work between the mother and offspring rather than the direct result of an accident of labor

In considering injuries of the cranial nerves during birth it must be borne in mind that congenital absence of these nerves may account for a permanent defect

FAIRBANKS supports the theory that the primary cause of birth palsy is strain on the cord of the brachial plexus not injury to the shoulder joint with subsequent injury of the plexus The upper arm type of paralysis is the most common The treatment consists in fixation of the arm in a position relaxing the paralyzed muscles with massage and the prevention of contracture Three months is usually a sufficient time to wait for maximum improvement to take place before resort is had to operative measures In untreated cases posterior subluxation of the shoulder joint is very apt to occur as the condition of the muscles least affected by the birth palsy becomes improved After open reduction with division of the tendon of the subscapular muscle and the contracted anterior part of the joint capsule the arm should be fixed in external rotation and abduction for three or four weeks

LUSK defined apneustic respiration as a type in which a steady deep inspiration is taken and retained the chest maintains the inspiratory position for two or three minutes until asphyxia supervenes and then sinks slowly a few gasps are taken and the cycle is repeated for a few hours finally giving way to expiratory spasm and gasping Experimentally produced apneustic respiration can be overcome by continuous ventilation of the lung The inspiratory tonus then lasts indefinitely Stimulation of the vagus under such conditions induces again a fairly normal type of respiration Clinically it may be assumed that when normal respiration is maintained in the presence of intracranial haemorrhage the brain stem is not involved Apneustic respiration points to haemorrhage in the pons When only expiratory spasms and gasping occur the damage is at the level of the strid Gasping alone indicates that the dominant haemorrhage is near the apex of the calamus scriptorius

STRACHAN emphasized the importance of prophylactic external versions in all cases of breech presenta

tion especially those of primiparæ since in these the liability to cerebral hæmorrhage is eight times greater than in vertex presentations.

MEYERS stated that orthopedic measures often give relief in spastic paraplegia and are of value in spite of mental impairment.

WILLIAM P. VAN WAGENEN, M.D.

Smith S. MacC. A Consideration of Dittie B. in Abscess with Special Reference to Diagnosis and Localization. Presentation of Cases and Specimens. *Lancet* 1924 xxiv 533.

The first consideration in otitic infection especially that of the recurring type is to determine the presence of complicating cerebral suppuration i.e. temporosphenoidal or cerebellar abscess. This is possible before compression is manifest even in cases developing slowly by careful clinical observation and vestibular tests.

The initial stage of cerebral suppuration is characterized by headache fever chills or chilly sensations and periodic vomiting.

The latent stage which is often of considerable length is characterized by ill health with periodic headache and a slow change in the patient's mental and physical habits.

The stage of manifest symptoms causes general debility weariness malaise and loss of weight and in children sometimes convulsions. Subnormal temperature—characteristic of brain abscess—occurs only when the dura is not involved. Convulsions especially when they are associated with other suggestive symptoms are almost pathognomonic of abscess formation especially in children suffering from chronic otorrhœa. In adults they are very infrequent.

Optic neuritis which is not found in simple internal aural suppuration is helpful in the diagnosis of abscess. It may be bilateral or present only on the side of the lesion.

Enlargement of the deep cervical gland is frequently the first sign of intracranial suppuration and when associated with otorrhœa warrants careful consideration.

After it has been decided that cerebral suppuration is present the second consideration is its location. The ratio of temporosphenoidal abscess to cerebellar abscess is about 8:1 in children and approximately 2:1 in adults. Indications of a temporosphenoidal abscess are symptoms of compression a subnormal pulse temperature and respiration and paralysis of the opposite side. When the abscess is situated on the left side there may be aphasia. Slowly developing contralateral facial palsy associated with otorrhœa recurrent attacks of stupor and developing hallucinations is very characteristic of temporosphenoidal abscess.

The cerebellum may be reasonably excluded if vertigo and past pointing can be produced by caloric or rotary stimulation of the labyrinth. On the other hand rotary nystagmus toward the affected

side with a dead labyrinth suggests that the abscess is in the cerebellum. Sinus thrombosis or a dead labyrinth with evidence of intradural suppuration suggests that the lesion is in the cerebellum. In simple internal suppuration there is absence of optic neuritis and the gait is a sway or a swagger.

Vestibular tests therefore may indicate an intracranial lesion and on the basis of the history and clinical findings this may be diagnosed as an abscess.

The reaction of the labyrinth to stimulation should be determined prior to a mastoid operation for chronic otorrhœa since it may be the only clue to intracranial disease.

WILLIAM P. VAN WAGENEN, M.D.

Elsberg C. A. Concerning Papilloedema in Tumors of the Brain and Its Surgical Treatment. *Arch. Ophth.* 1924 lx 37.

It is generally agreed that papilloedema whether it occurs early or late in the course of intracranial expanding lesions must be considered a late symptom of brain tumor. Obviously then the opportune time for treatment is when the eye grounds are normal or only slightly changed. So characteristic are the signs and symptoms of tumors of the cerebellopontine angle that operation should easily precede obstruction to the sylvian aqueduct or impingement on the side of the pons or medulla. In lateral recess tumors papilloedema may be sudden in onset and rapid in progress. A fact regarding these tumors which is as yet unexplained is the frequently greater advancement of papilloedema on the side on which the tumor is situated.

In cases of supratentorial growths the degree of swelling of the two disks varies greatly. Presumably this is due to the fact that here intracranial pressure depends on a combination of factors viz. the amount of internal hydrocephalus the degree of hyperplasia of the affected hemisphere and the size of the tumor. The pressure of the tumor itself may cause a predominating homolateral edema of the disk. Distention of the contralateral ventricle may cause a greater swelling on that side. In general however it may be said that cerebral tumors which lie at the greatest distance from the midline are most apt to cause papilloedema which is equally advanced in both eyes.

Cases of frontal lobe tumors show not rarely a homolateral pallor or optic atrophy of the disk and a slight papilloedema on the opposite side. The same condition is occasionally found in cases of suprasellar growths in which a papilloedema is superimposed on a preexisting optic pallor. In some cases of brain tumor papilloedema may be absent because of tensile brain atrophy secondary to occlusion of a cerebral artery by the growth process.

Appropriate early operative and decompressive measures can prevent blindness in the majority of cases and exert a marked beneficial action upon

fundus changes when the tumor cannot be removed. Spinal puncture intravenous injections of hypertonic solutions and the administration of magnesium sulphate by mouth or of hypertonic salt solution by rectum may be done as temporizing measures until suitable diagnostic studies can be carried out.

When blindness has once occurred even for a few hours no vision will ever return. The time that elapses before the disks are again flat after marked papilloedema may be several months but the initial reduction may be 2 or 3 diopters in a week. In cases of supratentorial growths the recession of fundus changes is more gradual because of the greater multiplicity of the factors producing the condition.

WILLIAM P. VAN WAGENEN, M.D.

Hughson W. Meningeal Relations of the Hypophysis Cerebri. *Bull. Johs Hopkins Hosp.* 1914 22 v. 32.

The usual general descriptions of the relations of the meninges fail to make any reference to their distribution about the pituitary. Since the stalk of Rathke's pouch disappears before the brain of the embryo is completely surrounded by its meningeal covering, Hughson believes that it is possible that the subarachnoid space invests the hypophysis.

He was able to demonstrate this relation of the subarachnoid space to the pituitary by the injection and preprecipitation of Prussian blue. Passage of fluid from the subarachnoid space into the substance of the gland has been shown. LOYAL E. DAVIS, M.D.

Horrax G. Generalized Cerebral Arachnoiditis Simulating Cerebellar Tumor. Its Surgical Treatment and End Results. *A. H. S. S.* 94 11 95.

The author reports a series of thirty-three cases with a presumptive diagnosis of brain tumor in which operation revealed only a greatly dilated posterior cistern with thickened arachnoid membrane containing pent-up cerebrospinal fluid under pressure. Five of the patients died two of them a few days after the operation and the three others from several months to two years later. In the four cases in which autopsy was done only inflammatory thickening of the arachnoid membrane forming the cerebellar and basal cisternæ was found. The twenty-eight patients who survived were benefited or were well from one to nine years after the operation.

Histological examination of a piece of the arachnoid wall removed at operation showed nothing more than the slight thickening that was evident grossly. Such evidence coupled with the subsequent improvement or entire relief of symptoms over long periods of time has convinced the author that the condition is not tumor but arachnoiditis as was surmised at the time the posterior fossa was exposed.

The use of lumbar puncture as a diagnostic measure in this condition is associated with the danger of foramen herniation of the cerebellum.

In the cases reviewed the procedure of choice was exploration of the suboccipital region and in the absence of tumor wide opening of the arachnoid cisternæ with evacuation of their contents.

WILLIAM E. SHACKLETON, M.D.

Royster L. T. Report of a Case of Streptococcal Meningitis Treated with Injections of Gentian Violet. *A. J. D. S. Child.* 1914 21 34.

Royster reports a definite modification of the course of a fatal case of streptococcus meningitis by the intraspinal injection of gentian violet solutions.

The patient was a boy 2 years old. On his admission to the hospital five days after an abrasion to an upper eyelid he was semi-unconscious and presented the typical signs of meningitis. Smears and a culture of the spinal fluid and of the pus from a complicating orbital abscess showed the organism to be a Gram positive streptococcus hemolyticus. The patient's condition was so serious that it was believed he would live only a few hours. Apparently as the result of gentian violet treatment he lived for three weeks and during this time the signs of meningitis were either slight or absent and the spinal fluid cell count was decidedly reduced.

The intraspinal dosage ranged from 0.04 to 0.16 mgm administered once or twice a day. Six intramuscular injections of 20 mgm each and three intravenous injections of from 20 to 40 mgm were given in addition.

The author states that the injections of the gentian violet into the spinal canal did not cause any reaction or irritation and believes that larger doses might have been more efficient.

WILLIAM P. VAN WAGENEN, M.D.

## PERIPHERAL NERVES

Dowman G. E. and Hoke M. The Treatment of Spastic Paralysis. *A. H. S. S.* 1914 1 45.

This article is based on the results of a study of 132 cases of infantile cerebral paralysis. It appears that the condition may be the result of prenatal, natal and postnatal factors. In the cases reviewed the prenatal causes were encephalo meningitis intrauterine trauma continued poor health of the mother, microcephalus, hydrocephalus and syphilis. The only natal factor encountered was birth trauma. Of the postnatal etiological factors measles, influenza, scarlet fever, tonsillitis or some other infective process are the most common.

The clinical pictures presented in cases of infantile cerebral paralysis are those caused by pyramidal tract lesions, those caused by extrapyramidal tract lesions and a type produced by both a pyramidal and extrapyramidal tract lesion. Only the cases belonging to the class of pyramidal tract lesions are suitable for operation. Patients selected for treatment should have an intellectual age of at least 4 years.

The three important features in the treatment of spastic paralysis are (1) relaxation of certain



groups of muscles by means of neurectomy (2) the correction of fixed deformities and unstable feet by means of orthopedic operations and (3) the use of physical training to teach the child to walk after the employment of the operative measures.

The authors report eighteen surgically treated cases. The results seem to justify the combination of operative procedures described.

LOYAL E. DAVIS, M.D.

**McKenzie, K. G.: Intramenigeal Division of the Spinal Accessory and Roots of the Upper Cervical Nerves for the Treatment of Spasmodic Torticollis. *Surg. & Obst.* 1924, 21: 15.**

In a case of painful spasmodic torticollis of unknown origin which was operated upon by the author there was still no recurrence of the pain or spasm one year after the operation.

In McKenzie's opinion the muscles which may be involved in various combinations to produce a torticollis are the two sternomastoids and the group of large neck muscles attached to the occiput.

In the past surgical treatment for this condition was confined to section of the motor nerve supply and division of the muscle itself. In the case cited the posterior and anterior roots of the upper three cervical nerves on one side were divided in addition to the spinal accessory. McKenzie suggests that section of only the posterior roots would relieve the spasm in the posterior spinal muscles and would thus leave their active motor function. In such an operative procedure the spinal accessory is not taken into consideration as fully perhaps as its role justifies.

LOYAL E. DAVIS, M.D.

**Ott, W. O.: The Surgical Treatment of Solitary Tumors of the Peripheral Nerves. *Tr. St. J. M.* 1924, 22: 7.**

The diagnosis of solitary tumors of peripheral nerves can usually be made without difficulty on the basis of the following findings:

1. A tumor in the region of a nerve.
2. Mobility of the tumor at right angles to the course of the nerve but not along its longitudinal axis.
3. Pain usually at the site of the tumor and along the peripheral distribution of the nerve, which is felt on pressure over the area of the tumor on motion of the part or on injury.
4. Absence of motor and sensory paralysis of the affected nerve or its presence to only a light degree.
5. A history of long duration and slow progress.

In cases of primary sarcoma, pain located at the site of the tumor and usually radiating along the peripheral distribution of the nerves is an early symptom.

Of the author's twelve cases nine were cases of solitary neurofibromata, one was a case of hamangioma and two were cases of sarcoma.

When at operation the diagnosis of neurofibroma seems certain the capsule should be slit longitudinally and the tumor shelled out if it affects an important motor or mixed nerve. A tumor involving an unimportant sensory branch may be excised. In cases of definitely malignant tumors wide excision of the growth is indicated and sometimes amputation of the extremity may be necessary.

WILLIAM P. VAN WAGEN, M.D.

**Turner, H.: Nerve Injury in a Typical Fracture of the Radius. (*Ubers. v. v. schädigung n. beim typische R. d. bruch*). *Arch. f. kl. Chir.* 1924, 122: 422.**

The importance of nerve complications in fractures of the upper arm is recognized but little is known regarding nerve lesions in typical fractures of the radius. Although such lesions are not rare they are usually overlooked and must be sought for with care. The terminal fibers of the dorsal interosseous nerve are most commonly caught at the point of fracture. The signs which follow are of a vasomotor and trophic nature. They appear usually after days or weeks as a firm edema of the back of the hand and the surrounding forearm, contraction of the fingers and stiffness of the wrist joint. The region of the imprisoned nerve ends gives pain but to pressure.

In the X-ray picture atrophy of the metacarpal bones is evident and the articular surface of the radius is not clearly defined. Of note is the fact that the distal row of carpal bones show more clearly than the proximal row. The author has seen a similar edema about the hand with similar impairment of function of the wrist joint in three cases of calcareous disease. He believes there was a direct as well as a toxic injury of the dorsal interosseous nerve. Such an injury with its results may well be looked upon as a trophoneurosis. The prognosis is relatively uncertain. Turner suggests that a resection of the dorsal interosseous nerve might bring about improvement.

LESLIE D. SMITH, M.D.

## SYMPATHETIC NERVES

**Royle, N. D.: The Operation of Sympathetic Rhizotomy. *Med. J. A. N. S.* 1924, 94: 587.**

**Hunter, J. I.: On the Choice of Procedure Adopted in the Operation of Rhizotomy for Spastic Paralysis. *Med. J. A. N. S.* 1924, 94: 59.**

Royle states that since his first report of the treatment of spastic paralysis by sympathetic rhizotomy he has performed a large number of operations on patients of different ages and the information gained has made it possible for him to improve the technique and lay down principles of surgical procedure. This article which does not lend itself to abstracting describes the technique of lumbar and cervical rhizotomy in detail as practised at the present time.

Hunter reports that in Royle's operation for the relief of spastic paralysis only the most common

es are divided whereas in the first operations the ramus of the second, third and fourth lumbar ganglia and the sympathetic trunk below the fourth lumbar ganglion were cut. Section of the second, third and fourth lumbar ganglia removes the influence of the sympathetic system from the muscles innervated by the upper part of the lumbar plexus. It avoids injury to the hypogastric nerves which communicate with the hypogastric plexus and supply the bladder and rectum. Section of the white rami of the upper lumbar nerves removes part of the influence of the hypogastric nerves as evidenced by the relief of constipation resulting from increased activity of the pelvic nerves of the craniosacral division. Section of the sympathetic trunk and removal of the gray rami of the fourth lumbar nerves affects the muscles supplied by the sciatic nerve and its branches. For the relief of spastic paralysis of the upper extremity the ramus communicans only are sectioned. There are no white rami in the cervical region except the ramus of the first thoracic spinal nerve.

LOYAL E. DAVIS, M.D.

Floercken H. The Technique of Resection of the Cervical Sympathetic (Zur Technik der Resektion des Halssympath.) *Z. f. allg. Ch.* 9:4 1907

The author has resected the cervical sympathetic in four cases—in three for angina pectoris and in one for pronounced bronchial asthma. Of the cases of angina pectoris two had only transitory results because only a portion of the stellate ganglion was removed. The third case showed definite improvement six weeks after the operation. In the case of bronchial asthma the paroxysmal attacks of dyspnea were relieved.

Floercken advises against local anesthesia. He performs the operation under ether-oxygen anesthesia with a preliminary hypodermic injection of

atropine. Since removal of the stellate ganglion is essential it is necessary to make an adequate incision along the anterior or posterior border of the sternocleidomastoid muscle.

Floercken proposes that the same muscle plastic incision which de Quervain and Kuettnier have advocated be used for wide exposure of the structures in the triangles of the neck. The skin incision extends from the mastoid process downward along the anterior border of the sternocleidomastoid and turns laterally at a point two finger breadths above the clavicle. The anterior muscle edges are freed and both portions divided over a Kocher dissector. The skin and muscle flaps are then retracted posteriorly with the accessory nerve. If the omohyoid is masked by coarse fibers these fibers are divided.

Upon the medial aspect of the vessel the chain is found and followed to the superior ganglion. The latter is divided in its center. At the level of the medial ganglion the laterally coursing inferior thyroid artery is divided. The chain is then caught with a fine hemostat and dissected down to the stellate ganglion which is freed from its connections with the vagus. Usually the first thoracic ganglion is in close relation to the stellate ganglion. The lower the resection can be made the better are the results of the operation. Upon the left side the thoracic duct can be easily avoided.

For angina pectoris resection of the depressor nerve is advised. At the same time the superior laryngeal nerve should be freed in order that undue manipulation of this nerve and the vagus may be avoided.

Periarterial sympathectomy of the carotid artery may be done in angina pectoris as Bruning suggested but Borchard has warned against the dangers produced by arteriosclerotic changes in the vessels.

LOYAL E. DAVIS, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Bartlett E. J. *The Treatment of Blue Dome Cyst*  
*J. Am. Med. Ass.* 1914 10: 343

Blue dome cyst is a retention cyst occurring during involution or due to hypertrophy and abnormal secretion is not a true neoplasm. Local treatment is not indicated except for cosmetic or psychic reasons. The practical problem is difficult because a positive clinical diagnosis is impossible. One cannot always differentiate between benign solid tumor cancer and cyst with papilloma or cancer.

The differential diagnosis between papillomatous cyst and blue dome cyst is complicated. Skin and nipple changes may be absent in a malignant cyst. The shape and consistency of the tumor are fallacious guides and aspiration is unsafe and inconclusive. Cancer frequently develops from intracystic papillomatous straw-colored fluid does not exclude cancer and indiscriminate needle use is dangerous.

Surgery is usually necessary to establish the diagnosis. The nature of the cyst is revealed by evacuation of the contents by radial incisions. When a blue dome cyst is found simple stripping of the wall and good closure are all that is necessary. When a papillomatous cyst is found a wedge-shaped portion of the breast should be removed. In malignant disease the complete operation is indicated.

M. L. Masov, M.D.

Yoon C. *Pathologico-Anatomical Research on the Routes of Distribution of Carcinoma of the Breast* (Ph.D. thesis, Anatomische Universitaet Bonn, 1913).  
*B. J. Chir.* 1913 3: 473

In order to determine the conditions active in cases of recurrence following amputation of the breast the author studied the anatomy of the lymph vessel system. In these investigations it was found that the superficial lymph vessel after passing the paramammary and axillary lymph glands empty into the axillary lymph gland and at the midline cross over to the opposite side. A second group pierce the pectoralis fascia into the musculature and flow directly or by way of the intermuscular lymph glands into the axillary and infraclavicular glands. Still other lymph vessels go through the pectoralis and intercostal muscles into the interior of the thorax to the anterior intercostal lymph glands.

The author discusses the relations of the blood vessels and musculature and describes the manner in which metastases are formed in different cases on the basis of twenty-five cases in which micro-

scopic studies were made. It was found that the carcinoma cells spread in the muscle tissue in the tissue spaces, the lymph and blood vessels and the sarcolemma sheaths. Therefore it is important to cut away the serrations of the pectoralis directly to the costal periosteum.

In order not to open the lymph vessels the author makes a longitudinal incision in the parasternal line from the clavicle nearly to the costal arch and from this two incisions encircling the breast with their apex in the axilla. For absolute certainty the second, third and fourth intercostal muscles and the anterior intercostal lymph glands are removed. Besides giving good exposure these incisions permit the removal of the infraclavicular and supraclavicular glands.

KULEVSKY (2)

## TRACHEA LUNGS AND PLEURA

Alexander J. *The Surgery of Pulmonary Tuberculosis*  
*Am. J. Med. Sc.* 1914 94: 68

Cavities whose walls are not very stiff are obliterated to mere clefts by successful thoracoplasty. The uncompressed lung compensates for the compressed lung by becoming huge with emphysema and hyperplasia. In Brauer's opinion no noteworthy functional demand is made upon the functioning lung in a resting patient except immediately after operation. Sauebruch states that the uncompressed lung moves considerably more after operation and that this causes a more rapid flow of lymph dissemination of the disease results if the lymph contains tubercle bacilli. Therefore it is most important that the better lung be entirely free from tuberculous activity.

At present the working rule is that thoracoplasty is never to be done when a satisfactory artificial pneumothorax is obtainable. The number of patients whose pulmonary disease is sufficiently unilateral to warrant compression of one lung is estimated at from 2 to 10 per cent. Matson and others attempted artificial pneumothorax in 85 per cent of 7,000 cases. In 41.3 per cent only partial compression was possible and a clinical cure was obtained in only 15.5 per cent whereas the satisfactory compressions gave a clinical cure in 45 per cent.

About 2 per cent of tuberculous patients are suitable for surgical therapy. Numerous series of cases show that the final results of pneumothorax and of thoracoplasty are about the same: a cure being obtained in 35 per cent and improvement in 33 per cent while in 35 per cent there is no improvement or the condition becomes worse. Each method has certain advantages. In contrast to thoracoplasty pneumothorax is non-dramatic and shock-

ing and as it produces compression gradually is free from the danger of acute circulatory and respiratory disturbances and of pneumonia from the aspiration of large amounts of expressed secretions. Moreover as the accumulated toxins are squeezed out into the circulation gradually there is less danger of lighting up other foci. If necessary pneumothorax can usually be released.

Although thoracoplasty upon tuberculous patients is a major operation with a mortality of from 1 to 10 per cent its performance in several stages has made it remarkably safe. While the operation of artificial pneumothorax is an essentially trivial procedure gas embolus and pleural eclampsia are true dangers. It is generally estimated that serous effusions are formed in 50 per cent of cases of pneumothorax. McKinzie estimates that 5 per cent of these effusions become purulent. Of Sauerbruch's seventy three cases of cavity rupture fifty seven were caused by attempts to stretch adhesions. The mortality was 86 per cent.

Frequently the immediate results of pneumothorax are so satisfactory to the patient that he fails to return for the necessary continuation of treatment. As thoracoplasty when once done is done permanently it may be indicated for persons who might be expected to abandon pneumothorax treatment prematurely. It is preferable to the operation of intrapleural pneumolysis or the use of the Jacobaeus thoracoscope and cautery for adhesions and will collapse certain thick walled cavities which are not affected by artificial pneumothorax.

Surgical compression is indicated for largely unilateral lesions when all other treatment including a sufficiently long sanatorium régime and attempts to induce artificial pneumothorax have failed. Operation should be limited to patients between 15 and 45 years old. It is especially indicated in cases of marked basal lesions. Better results are obtained from operation on the left lung than from operation on the right. It is important that the lesions be predominantly chronic and fibrous rather than rapidly progressive and caseous as the latter do not respond favorably to compression.

Some form of surgical compression is indicated also for cases of recurrent severe hæmoptysis in which artificial pneumothorax cannot be reproduced. Pnambrovis tries minor phrenicotomy before using more severe measures. Stoeklin commends pneumolysis with a paraffin film. Sauerbruch does a typical paravertebral thoracoplasty if the hæmorrhages have been small and the patient is a good condition.

In the opinion of Sauerbruch and Stoeklin the small active lesions on the hilus or the lower lobe of the better lobe absolutely contra indicate operation. Careful functional tests of the cardiovascular system are essential for sound judgment regarding the operability of a case. Bull considers thoracoplasty contra indicated when bone or joint tuberculosis is present. Curable psychoses do not contra indicate operation. If adhesions prevent the use of pneumothorax during pregnancy a therapeutic

abortion should take precedence over thoracoplasty. Mild and moderate laryngeal tuberculosis almost always improve after thoracoplasty. Organic nephritis contra indicates thoracoplasty. Every European writer on the subject condemns operation if there is intestinal tuberculosis.

Brauer finds that from 10 to 15 per cent of patients who have been operated on show progression of the lesions in the better lung and that usually this leads to death.

The pre operative and the operative treatment are best carried out in suitably equipped sanatoria rather than in general hospitals. Bed rest is indispensable for patients with a simple bronchitis. To prevent the aspiration of infected secretions the patient should empty his lung before operation.

Regional and local infiltration anaesthesia are more frequently used than general anaesthesia. Most of the surgeons referred to by Alexander fear the toxic effects of novocaine. Berard is pleased with the effects of anacaine which has a more prolonged action.

The variability of the type and the location of the lesions and the patient's general condition make definite rules impossible. Phrenicotomy is a favorable preliminary to any type of operation. In general most patients progress better after a thoracotomy than after a thoracoplasty. Resection of parts of the ribs from the first to the eleventh is known as the complete operation as it compresses the entire hemithorax and places it at rest. Partial operations put only part of the lung at rest. This is an advantage however when the lesion involves a very small area when the patient is too sick to withstand the shock of the complete operation and when the better side would be activated by the additional load thrown upon it by the complete procedure. When satisfactory compression is not obtained by the complete operation it may be necessary to supplement the original operation by pneumolysis. J. FRANK DOLGUTH, M.D.

#### Law A. A. Some Surgical Considerations of Extrapleural Thoracoplasty. *J. Laet.* 1924, xiv 365

Extrapleural thoracoplasty is more generally favored in Europe than in America. It is indicated only in cases of long standing in which collapse of the lung has been unsuccessful. It is not advisable in acute progressive cases or in those with a tuberculous process elsewhere in the body.

The operation of choice is the removal of a segment of the ribs from the first to the eleventh or twelfth as standardized by Sauerbruch. This allows complete collapse of the lung while section of the ribs permits only partial collapse. Rapidity in operating is imperative since all respiratory effort is placed on the opposite lung. Complete resection should be finished in forty minutes.

The dangers are decidedly lessened by performing the operation in two stages removing one half of the ribs at the first stage and the remainder from the

to three weeks later. The author prefers a combination of local anesthesia with gas-oxygen analgesia. The length of the incision will depend upon whether a one or two stage operation is to be done. If long posterior stumps are left behind the lung will not collapse completely and new bone formation will occur since the periosteum has been left behind.

The dangers of pulmonary edema and mediastinal flatter following the operation must be borne in mind. In the great majority of cases coughing and expectoration decrease, the pulse and temperature return to normal and the patient gains in weight and feels very much better. The operation causes only slight deformity. **WILLIAM J. LICKERT, M.D.**

**Bettman R. B. Chronic Empyema. Surg. Clin. N. Y. 1924, v. 8, 221.**

Bettman reports a case of chronic empyema and gives his conclusion as follows:

1. Chronic empyema can often be prevented by care in the treatment of acute empyema. Acute empyema should be treated first by the closed method. Rib resection should be used only in the few cases which do not respond to the closed method.

2. A case of acute empyema should not be pronounced cured as long as any cavity remains. A closed unobliterated cavity, even though sterile, will probably become reinfected and lead to a recurrence. Cavities that do not become reinfected are the exception.

3. The shape and extent of an empyema cavity can be clearly determined by filling it with a 12 per cent solution of sodium bromide and then x-raying.

4. Many cases of chronic empyema can be cured by simple drainage and careful debridement plus the use of blow bottles and calisthenics.

5. Radical open treatment should be considered only after conservative treatment has proved inefficient.

6. The aim of all radical operations should be the obliteration of the cavity.

The operation used in the case presented consisted in brief of the formation of a skin flap, exposure of the cavity in its entirety by resection of the overlying ribs and thickened pleura, decortication of the exposed lung where this was easily accomplished, cauterization of fistulae and inversion of the skin flaps. The marzipanized wide-open defect was allowed to heal by cicatrization.

This operation is best performed in two stages. The anesthetic of choice is nitrous oxide and oxygen because it permits a tidal respiration of the lung at any time so that its postoperative expansion can be estimated.

#### ESOPHAGUS AND MEDIASTINUM

**Deming R. The Vascular Supply of the Esophagus. A Contribution to the Surgery of the Esophagus. (D. G. T. S. Surg. Clin. N. Y. 1924, v. 8, 221.)**

The author made macroscopic, microscopic and roentgenological studies of the arterial supply of

the esophagus. The results of these investigations are of value particularly for practical surgery. This extensive work is illustrated with numerous pictures. The following conclusions are drawn:

1. The esophagus is divided into four parts: the cervical portion, the bifurcation portion, the thoracic portion and the abdominal portion. This division is based upon anatomical conditions and the vascular supply.

2. The blood supply of the cervical portion of the esophagus is furnished by the inferior thyroid artery and a branch derived directly from the subclavian artery. The inferior thyroid artery supplies the upper half of the cervical portion of the esophagus and the direct branch of the subclavian artery supplies the lower half.

3. Division of the course of the inferior thyroid artery into a lower and an upper ascending portion and a transverse connecting portion with a median and lateral bend is important for the better description of the three almost typical points in the inferior thyroid artery from which branches lead off to the esophagus. These three points are the following: (a) in the center of the upper ascending portion, (b) at the median bend, and (c) at the lower ascending portion near the subclavian artery.

4. Generally the right inferior thyroid artery has more branches than the left. The left branches do not anastomose with one another as abundantly as the branches of the right inferior thyroid artery.

5. The direct branch of the subclavian artery is not constant but is present in more than half of the cases. When it is not present the lower half of the cervical portion of the esophagus is less well supplied with blood vessels.

6. In contrast to the macroscopic examination the microscopic examination of the cervical portion of the esophagus shows that the left border is just as well supplied with blood vessels as the right, if not better. The roentgenogram of the intra-organ blood vessels corresponds to the microscopic findings.

7. Surgical exposure of the cervical portion of the esophagus from the left side is justified on the basis of the macroscopic, microscopic and x-ray investigations not only for technical reasons but also because it gives more favorable conditions for the healing of wound.

8. The bifurcation part of the esophagus which is supplied chiefly by the anterior and posterior esophagotracheal arteries shows very good nutrition throughout all its part and is the part in which the esophagus which has the best blood supply. Its surgical approach, however, is very difficult because of its position, because of the shortness of the blood vessels.

9. The thoracic portion of the esophagus is supplied by the esophageal proper arteries and posterior aortic arch vessels. In number and distribution they are similar to the cervical portion of the esophagus but the blood supply is poorer.

blood supply than the lower half especially on the anterior surface and at the right border. The right border of the esophagus in the lower portion of the thoracic part has the poorest blood supply.

10. Because of the vessels reaching the esophagus from the left an approach from the right and posterior aspects comes up for consideration in exposure of the upper part of the thoracic portion of the esophagus. In this approach the poorly nourished areas with a lack of sufficient anastomoses between the thoracic portion and the bifurcation portions of the esophagus must be borne in mind.

11. In the abdominal portion of the esophagus only the posterior surface and the right border have a good blood supply. This is provided chiefly by branches of the left gastric artery. As a rule the left inferior phrenic artery supplies the left border of the esophagus and sometimes also the posterior surface. There are abundant anastomoses between the blood vessels of the abdominal and thoracic portions of the esophagus especially at the right border of the esophagus. The blood supply of the abdominal portion of the esophagus is in general much less abundant than that of the thoracic portion.

12. Operative exposure of the thoracic and abdominal portions of the esophagus is much easier from the left side because of the position of the esophagus and the greater mobility of the esophagus due to the greater length of the blood vessels. In this approach the less vascular right border of the esophagus in the region of the lower thoracic portion must be borne in mind.

13. The uncertainty of sutures in the esophagus is due largely to the fragility of the esophageal wall due chiefly to the relatively poor blood supply of the circular and longitudinal musculature compared

with the much richer blood supply of the esophageal mucosa.

14. The predilection of carcinoma for the level of the bifurcation and the cardia cannot be explained by the vascular supply of the individual portions of the esophagus. (CL 55 (7))

Peterson R. and Miller N. F. The Thymus of the Newborn and Its Significance to the Obstetrician. *J Am Med Ass* 924 LXXXIII 234

From a study of 120 infants the authors draw the following conclusion:

Abnormally enlarged thymus occurs in from 40 to 50 per cent of newborn infants.

In general few symptoms indicative of thymic hyperplasia are apparent the first day of life and when noted are generally mild.

A tendency toward a higher incidence of thymic hyperplasia is noted in infants born of elderly mothers and of multiparae in male infants and in infants born at term.

There is no appreciable difference in size or in weight between infants having thymic hyperplasia and those with a negative thymus.

There is a definite fluctuation in the size of the thymus synchronous with respiration.

In the diagnosis the roentgen ray is superior to clinical method.

While it may be impractical to subject every newborn infant to an X-ray examination it is of great importance that every baby with thymic symptoms be so examined. Stereoscopic films of the chest taken at the end of expiration are of more practical value than fluoroscopic observations. Potential dangers from hyperplasia of the thymus may be eliminated by early diagnosis and roentgen ray treatment.

ROLAND S. CROX, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Andrews E. A Method of Herniotomy Utilizing Only White Fascia. *A. S. S.* 1924 1: 25

The author presents considerable evidence that the inclusion of the internal oblique muscle in the inner row of sutures is a mistake as it not only fails to strengthen the lower end of the canal but perhaps weakens the inguinal sphincter and helps in the production of a new direct hernia.

An operation is described in which the restoration of the canal is effected with the use of only white fascia.

The floor of the canal is constructed by suturing the endoabdominal fascia (transversalis) to Poupart's ligament. The cord is transplanted and the external oblique aponeurosis is sutured to Poupart's ligament under the cord. The cord is then replaced in its newly formed bed and the lower flap of the aponeurosis is sutured over it as a roof for the canal. Interrupted sutures of kangaroo tendon are used, all knots being placed outside the canal.

CYRIL J. GLASPEL, M.D.

Coley B. L. Three Thousand Consecutive Herniotomies. *A. S. S.* 1924 1: 42

Three thousand recent consecutive cases of herniotomy have been classified according to the age and sex of the patients and the type of the hernia. Recurrence rates in each group have been compiled on the basis of 237 cases followed up.

The cause of recurrence may be arbitrarily divided into

1. Factors inherent in the subject such as the patient's age and occupation, the size and type of the hernia, the development of the abdominal musculature, the presence of adipose tissue and strangulation of a hernia in a patient whose condition is critical. The main surgical problem is complete or partial absence of a conjoined tendon.

2. Factors over which the surgeon has control: a. Failure to recognize and dispose of the hernial sac. b. Wound infection. c. Use of nonabsorbable suture material. d. Closure under tension. e. Failure to support the operative wound by proper dressings and failure to prevent postoperative bronchitis and pneumonia with their attendant cough. Better judgment in the selection of cases for operation and more attention to the details of operative technique and postoperative care will tend to reduce the incidence of recurrence.

In children recurrence is a rare sequel to a properly performed operation. In 91 cases of operation for all varieties of hernia, 300 of which were followed, Coley was unable to find a single recurrence.

Follow up examinations are becoming the rule in most metropolitan clinics. Recurrence rates not based upon follow up examinations should be discounted.

Direct hernia is rare in the female and in children under 15 years of age. The cure of direct hernia represents a distinct problem. Many herniae of this type are best managed by some modification of the Bassini operation. A certain percentage present musculo-aponeurotic deficiencies which render the prospect of a permanent cure unfavorable in this group; operation is not advisable.

The hope for better results lies in the exercise of more careful judgment in the selection of cases suitable for operation rather than in the adoption of new procedures based upon new principles.

Saddle bag or direct and indirect hernia should be considered and treated as a variety of direct hernia. Removal of both sacs is essential. In Coley's series of 280 cases of direct hernia, male adults, eighty-five of which have been followed, a recurrence developed in fourteen (16.4 per cent). For this variety of hernia the living suture repair of Gallie is of great value and may become the suture of choice.

Thus far there is no conclusive evidence that the repair of femoral hernia by the inguinal route gives better results than those obtained by the simpler method.

Cases in which a recurrence has developed once will be more apt to develop a recurrence again. The second recurrence may be larger and less amenable to truss treatment. Therefore the advisability of reoperation should be most carefully considered. Thirteen per cent of the fifty-seven recurrences in the author's series followed operation for previous recurrence. In this group Gallie's operation with the use of living sutures has a distinct place.

The type of operation to be performed should be determined by the tissues available for repair. The use of a standardized technique for all cases is to be deprecated.

Local anesthesia has extended the field of operability to include the aged and those suffering from intercurrent disease which in itself contraindicates the use of a general anesthetic. It is of value particularly in cases of strangulated hernia in adults. However, as a routine, Coley favors the use of gas oxygen with the addition of a small amount of ether if necessary and for children ether administered by the drop and open cone method.

Coley subscribes to Morison's statement that although many surgeons consider the operative cure of hernia a simple procedure it requires sound surgical judgment and considerable technical skill.

CYRIL J. GLASPEL, M.D.

## GASTRO INTESTINAL TRACT

Morrison T H and Gantt W H A Study of the Gastric Residuum *A m Cl n Med* 19 4 149

Our knowledge of the gastric residuum has been obtained from a study of the gastric contents removed through the ordinary stomach tube. Rehffuss and his co-workers have shown that usually the gastric residuum cannot be removed completely by means of the stomach tube and that as a rule it is possible to obtain a much greater quantity by employing the Rehffuss tube.

By means of the Rehffuss tube the authors made observations of the gastric residuum of ten normal persons and fifty patients affected with various disorders. From this study they conclude that the examination of the gastric residuum is an extremely important method of gaining valuable information regarding gastric function. Since as routinely employed the ordinary stomach tube obtains only a fraction of the gastric content—usually about one third or one fourth of the total amount—it is important to employ the Rehffuss tube for exact information regarding the volume of residuum. The microscopic examination of the contents of the fasting stomach is more important than the estimation of the volume secured, and for this determination the Ewald tube is about as good as the Rehffuss tube.

JOHN W. NICHOLS, M.D.

Goldbloom A Hypertrophic Stenosis of the Pylorus *Med Cl n Am* 9 4 739

Goldbloom reports the case of a male infant aged six weeks who was apparently normal during the first three weeks of life but then began to have attacks of explosive vomiting immediately after eating which were followed by emaciation, constipation, a reduction in the amount and an increase in the concentration of the urine voided, visible waves of gastric peristalsis and a palpable mass in the right upper quadrant.

Pathologically considered this condition is more than a simple hypertrophy of the muscle there is probably a neuromuscular degeneration in the pylorus causing incoordination of the physiological opening of the sphincter. The size of the tumor has no relation to the severity of the symptoms. Hypertrophy of the circular muscular coat puckers up the mucosa and the element of spasm completely obliterates the pyloric orifice.

In the case reported a Fredet-Rammstedt operation was done; the pylorus being incised for about 1½ in. and the edges of the incision discolored until the red mucosa was seen. Bleeding was controlled with hot sponges. The pylorus was then dropped back into place and the wound closed. Anesthesia was induced with ether. The operation lasted twelve minutes.

After the operation saline solution was given subcutaneously and was absorbed very rapidly. By mouth water was given first and then human milk, the quantities being increased gradually. On the

sixth day the child was put to the breast and on the tenth day was discharged cured.

Medical treatment is permissible for three or four days in mild cases or in those with little loss of weight. Howland advises refeeding the same type of food after the infant has vomited. Another method is that of Sauer who gives a food so thick that it cannot be vomited and remains in the stomach a sufficiently long time to relieve the spasm temporarily. A third method is that of Hass who gives atropin in fairly large doses beginning with 1/1000 gr immediately before each feeding and increasing the amount to as much as 1/250 gr. This method is best used in conjunction with Sauer's regime.

In the author's opinion surgical treatment is the most economical as usually the child is thriving as early as ten days after operation while infants treated medically must generally remain in the hospital a month or two and sometimes longer.

The prognosis depends on the rapidity of the loss of weight, the severity of the symptoms, whether or not the child has been weaned before the operation and the length of time that elapses before the operation is performed. CLAYTON F. A. DREWS, M.D.

Friedwald J and West P F Massive Hemorrhage from the Stomach Produced by an Unusual Cause *Am Cl n Med* 17 4 38

The authors report the cases of two elderly males who died from massive hemorrhage of the stomach. In both instances a partial autopsy revealed arteriosclerotic thickening of the gastric vessels with rupture of the right gastric artery. The stomach was filled with clotted blood.

These cases are reported to point out that great care must be exercised in making a diagnosis of gastric or duodenal ulcer on the basis of hemorrhage alone. JOHN W. NICHOLS, M.D.

Lund F B Surgical Treatment of Chronic Ulcer of the Stomach and Duodenum *Boston M J* 5 1924 11 39

The essential points in gastro-intestinal surgery are the avoidance of soiling during the operation, the avoidance of tension on the line of suture subsequent to operation, the avoidance of kinking, and above all the avoidance of hemorrhage.

Soiling is avoided and the accurate apposition of the tissues is made much simpler and easier by the use of clamps. The one danger of the clamp—secondary hemorrhage after the operation—may be avoided by careful and accurate placing of every suture. The author uses a long straight round needle threaded with No. 2 chromic gut. This suture material is coarse enough to be strong and to hold the tissue well and does not become absorbed too soon. The clamps are removed before the first layer of sutures is completed to determine whether there is any hemorrhage. The operation is easiest in the thin subject whose stomach hangs low. When the stomach is high and the mesentery is loaded with fat it is of advantage to carry the incision up to the



xiphoid The opening in the mesocolon should be as close to the root of the mesentery and as far from the colon as possible

Vomiting is a rare and unimportant symptom in duodenal ulcer Excision of a duodenal ulcer without gastro-enterostomy should never be done as it merely substitutes a suture line for the ulcer without changing the abnormal condition which produced the lesion With the exception of the hyperacidity we do not know definitely what these conditions are

Resection of a duodenal ulcer even if the operative risk is only slightly increased is inadvisable because there is no danger of malignant degeneration in this lesion On the other hand ulcers on the pyloric side of the stomach according to the Mayos carry the potential danger of carcinomatous change

Ulcers on the lesser curvature are less apt to be benefited by gastro-enterostomy Their excision is difficult and often fatal They are best treated by Balfour's method—burning the ulcer out with the cautery inverting and suturing and performing a gastro-enterostomy The ulcerated area should be destroyed without carrying the cautery into the surrounding healthy tissue The Balfour cautery excision is indicated especially in cases with hemorrhage and in these it should be preceded by a blood transfusion

Mayo obtains a cure in 90 per cent of the cases of duodenal ulcer by gastro-enterostomy and believes that the use of the Finney pyloroplasty will effect a cure in another 5 per cent In smaller ulcers on the lesser curvature Balfour's operation (cauterization and gastro-enterostomy) will cure in 90 per cent

In the author's experience ulcers at the pylorus or just on the gastric side heal as well after gastro-enterostomy as those of the duodenum However if resection is safe and easy that is if the stomach can be drawn well outside the abdomen it should be done C. J. GLASPEL M.D.

Cl. Armont P. The Results of the Surgical Treatment of Ulcer (L'rs. bur d per t en B h d l g der Ul ak nke t) 3 kn m t H ch / 19 4 1 209

The purpose of this report on the end results in 1419 cases of ulcer treated surgically is to ascertain if possible the reasons why the different operations fail to effect a cure Clairmont opens his article with the following sentence It has been shown that the longer the surgically treated cases are observed the more frequent are the unfavorable reports

The established operative methods are presented in tabular form with their successful results their failures and the causes for the latter The total mortality of surgical treatment of ulcer and its complications is shown to be 10 per cent The immediate operative mortality of the first operation (1086 patients) was 7 per cent When a second operation is necessary (thirty nine cases) it rose to 15 per cent In operations for peptic ulcer (fifty even cases) it rose to 2 per cent and in complicated

dangerous to life such as hemorrhage (fifteen cases) and perforation (sixty seven cases) it was 40 to 42 per cent

The first operations were divided into radical procedures such as resection of the stomach and conservative procedures such as gastro-enterostomy with or without pyloric exclusion

Transverse resection—performed in 181 cases—had a remarkably low mortality viz 5.5 per cent The mortality of the Billroth II operation (245 cases) was 9 per cent and that of the Billroth I operation (sixteen cases) 12.5 per cent

In comparing the operative mortality of the radical and conservative procedures it is of importance to note that the mortality of the more serious operation is only slightly higher than that of the palliative procedure Against an operative mortality of 7.7 per cent in the former there was a mortality of 5.4 per cent in the latter

Of the total number of patients operated upon 25 per cent died from peritonitis 14 per cent from pneumonia and 1 per cent from ulcer (hemorrhage etc) After transverse resection on pneumonia is the chief cause of death it begins constantly on the left side The cause of death is infection by contamination through the diaphragm I resection according to the Billroth II method 60 per cent of the death are traceable to peritonitis in spite of the severity of the operation pneumonia plays a lesser rôle In the palliative methods the chief death is from the ulcer in dequate techniques rather than lesser danger namely vicious circle

The late results of the radical interventions are decidedly more favorable than those of palliative operations A complete cure was obtained by the Billroth II operation in 77 per cent of the cases by transverse resection in 67 per cent by pyloric exclusion in 50 per cent and by gastro-enterostomy in 56 per cent In 33 per cent of the cases subjected to transverse resection the ulcer frequently persisted or recurred or there was retention or in the third group there were symptoms of a pancreatic lesion The last in which was depended upon the relation of the ulcer to the pancreas Most of the failure of the Billroth II operation cannot be definitely explained but probably are due to factors similar to those causing the failure of transverse resection

Failure of pyloric exclusion to effect a cure was due directly to a peptic ulcer of the jejunum in 70 per cent of the cases This same applied to gastro-enterostomy In twenty of fifty nine transverse resections patients a persistent ulcer was found and in twenty a peptic jejunal ulcer Finally latter fifty seven operations were done

Observations of the late results of the various operative procedures showed that resection does not always cure A second gastro-enterostomy soon after the first sometimes gives good late results Other interventions such as jejunostomy or excision are not apt to give good results

Cases that were not operated upon were uninfluenced by medical treatment The question

whether in these method which bring about a good immediate result it is possible to obtain a permanent cure with certainty must be answered guardedly for transverse section and in the negative for pyloric exclusion. Pyloric exclusion must be abandoned. All experience points to radical operation i.e. resection as the proper procedure. Resection should be as extensive as possible even though the reasons for wide resection are based upon empirical rather than physiological grounds. It is still unexplained why in one case the ulcer begins acutely and rapidly increases in size and in another case even when it has been present for years it remains small and without substantial local reaction. Why in some cases following jejunostomy or gastro-enterostomy it heals without leaving a trace and in other cases it not only remains uninfluenced but continues to progress.

STEGEMAN (Z)

Friedenwald J and Bryan W J Free Hydrochloric Acid in Gastric Contents in Carcinoma of the Stomach. *J Am Med Ass* 924 131

Of 100 cases of carcinoma of the stomach in which fractional analyses were made of the gastric contents 52 per cent showed achlorhydria 16 per cent hypochlorhydria 26 per cent normal acidity and 6 per cent hyperchlorhydria. When these figures are compared with those obtained by means of an Ewald test breakfast it becomes evident that in a large number of instances in which acidity is noted by the latter method of examination this finding is misleading since free hydrochloric acid may still be determined at some period during digestion by the fractional examination of the gastric secretion. If conclusions were based on the findings of the Ewald test breakfast alone the incidence of achlorhydria in the series of cases reviewed would have been 9 instead of 52 per cent.

WALTER H WADL E M D

Melchior E The Surgical Pathology of the Duodenum (Beiträge zur Chirurgie des Duodenums) pathologische Anstalt 4 1891 633

One of the forms of fixed ileus that has been the subject of considerable debate is the form known as arterio-mesenteric occlusion of the duodenum. Melchior first presents the various theories as to the mechanism of its origin. Von Haberer assumes that it is caused on the only condition necessary is the 1 per cent of the stomach into the pelvis. According to other theories it is secondary to a process in which the stomach primarily paralyzed and distended as the result of some other condition drags the small intestine down into the pelvis stretches the mesentery and cuts off the lumen of the bowel mechanically. According to another hypothesis the occurrence of arterio-mesenteric duodenal occlusion is an arbitrary assumption on so-called cases of paralysis of the stomach may be ascribed to acute tonic condition which involves the duodenum in pathetically.

A condition resembling ileus which appears after gastro-enterostomy the author considers either a simple atony or a secondary mechanical obstruction of the bowel due to a kink or the pressure of the stomach on the efferent loop. With closure of the pylorus this would lead to simple stasis within the duodenum and under such conditions the vomiting of bile would logically exclude an effective arterio-mesenteric occlusion. It appears equally improbable to Melchior that the small intestine by its own efforts alone could exert a sufficient pull on the mesentery to occlude the duodenum.

A remarkable fact shown by both the clinical and the anatomical findings is that in spite of the assumed complete compression of the duodenum no other local change can be discovered. If the duodenum were compressed by the mesentery there would be pressure phenomena in the root of the mesentery with consequent stasis transudation in farction and gangrene. It has been definitely determined that an intraperitoneal transudation never occurs.

The theory that arterio-mesenteric occlusion of the duodenum can occur only when the intestine is empty is opposed by the theory that it can occur only when the intestine is full.

A very strong argument against the theory of primary arterio-mesenteric occlusion of the duodenum is that other mechanical obstructions of the intestinal lumen at the juncture of the duodenum and jejunum present an entirely different picture. Important facts against this theory are furnished also by what we know about the chronic condition. It is not clear why in one case there should be a severe acute picture and in another the picture of a mild intermittent aggravation of a chronic obstruction of the duodenal lumen.

An important support of the theory of acute arterio-mesenteric occlusion of the duodenum was the long held belief that the abdominal or knee chest position is sufficient to withdraw the small intestine from the pelvis and thereby relieve the stoppage. However the cases of assumed mesenteric compression cited by Melchior gave the impression that those in which this measure failed far outnumbered those in which it was successful.

A further argument against the theory of primary arterio-mesenteric duodenal occlusion is the marked inconsistency of the anatomical findings. In some of these cases the apparently mechanical occlusion is in the upper duodenum in others the dilatation extends over a small portion of the jejunum and in still others it is impossible to determine the nature of the mechanical impediment. Even the typical condition found at operation is the ceasing of the duodenal inflection where the mesentery crosses over does not necessarily indicate that the obstruction is due to the root of the mesentery.

However from the incomprehensibility of the physical genesis of the condition and the inconsistency of its clinical picture we pass to secure grounds if we regard as a cause of arterio-mesenteric duo-

denal occlusion as identical with or a secondary phenomenon of acute atony of the stomach resulting from the effects of narcosis or trauma such as gross contusion or lengthy operation manipulations. Other etiological factors may be acute distention produced by substances causing fermentation and infections with severe after effects. As a rule the atony does not affect the stomach alone, the duodenum also is involved to a greater or less extent. The author therefore suggests for the condition the term *atonia gastroduodenalis acuta*.

As there may be isolated paralysis of the duodenum there is probably also an isolated paralysis of the duodenum. The assumption of an originally isolated duodenal atony of this type would explain those rare cases in which the stomach is found undilated and the establishment of a gastro-enterostomy may be of benefit. It is conceivable also that the dilated stomach might press the small intestine into the true pelvis and cause compression of the duodenum indirectly by causing tension on the root of the mesentery. In disagreeing with von Haberer's arguments against identifying arterioenteric duodenal occlusion with acute gastroduodenal atony the author attempts to prove by citing cases that on the basis of a more sudden or gradual onset or the later course it is impossible to make a sure differential diagnosis between the two conditions. He declares untenable also the last of the symptoms given by von Haberer in the differential diagnosis between arterioenteric duodenal occlusion and dilatation of the stomach, viz. the reaction of the pulse when the contents of the stomach are siphoned off.

Melchior passes quickly over the chronic forms with which he has had no experience. The clinical symptoms of what is termed chronic arterioenteric duodenal occlusion are intermittent and generally persist for years. They begin with headache, vertigo, neurasthenia, cardiac disturbances, coldness of the extremities and persistent constipation. The mechanical disturbances cause pain and distention in the right hypochondrium appearing a few hours after meals, nausea and vomiting. Sometimes the vomitus contains bile. Of importance in the diagnosis is the presence of a tympanic distended zone corresponding to the duodenum. The fluoroscopic examination shows obstruction of the duodenum. The disturbance disappears when the patient lies down. Some surgeons have mentioned as not very unusual the presence of a cord running from the transverse mesocolon to the mesentery.

In conclusion Melchior states that since the hypotheses for the occurrence of a primary arterioenteric duodenal occlusion are unsatisfactory and since there are so many anatomical possibilities of a different nature which might produce the same syndrome we must admit the uncertainty of the entire question. He fears that chronic duodenal stenosis will become a fashionable diagnosis like chronic appendicitis without acute cures and epigastric hernia.

CASE 11 (2)

**Peck G. H. The Present Status of the Surgical Treatment of Chronic Duodenal and Gastric Ulcer. *Am Surg* 9:4 1933 31**

The author states that most surgeons are content to let the internist treat cases of chronic duodenal ulcer as long as the physician and patient are satisfied that the treatment is giving relief and a cure is being effected. He agrees with the internist that early uncomplicated cases should first receive medical treatment and that a considerable number of patients are cured or at least kept in reasonable comfort thereby for long periods of time. It is a well recognized fact that many patients prefer to bear recurrent periods of discomfort rather than submit to the hazards of operation and are willing to accept a certain percentage of risk as to the possible occurrence of hemorrhage perforation or obstruction. Such persons should have a clear understanding of the situation. Ample opportunity for surgery exists in cases which fail to respond properly to medical treatment in those of persons unwilling to endure repeated relapses and in those in which complications threaten or occur. In cases in which a history or ill-founded diagnosis has been made and is unsupported by adequate clinical symptoms thorough medical treatment is important.

Peck is greatly disturbed by the recent tendency to advocate radical measures of resection often of large portions of the healthy stomach for the surgical cure of uncomplicated chronic duodenal ulcer.

On the basis of his own experience in 196 cases he believes that a simple gastro-enterostomy properly performed is curative and adequate in the great majority of cases and that from 8 to 90 percent of the patients so treated are completely relieved of their symptoms and remain well. The operation is as successful when there is no obstruction as when obstruction is present. Peck does not practice or recommend any method of pyloric exclusion.

The choice of procedure depends upon the pathological type of ulcer. Leaving out acute perforations the cases may be classified into four general groups: viz.

Group 1: Small single anterior wall ulcers with out narrowing of the gut. These may be locally excised without encroaching on the duodenal lumen or pylorus in any extent. Local excision without gastro-enterostomy is sufficient.

Group 2: Chronic indurated ulcers without obstructions, single or multiple. The majority of duodenal ulcers fall in this class. Gastro-enterostomy alone will cure a large percentage of these cases. Most radical methods are generally unnecessary and unwarranted. This group includes the chronic perforating type of ulcer with or without hemorrhage but without extensive adhesions and sometimes with a considerable inflammatory mass. In many of these cases radical resection would be hazardous especially if resorted to at the time of the primary operation. A two-stage procedure is best.

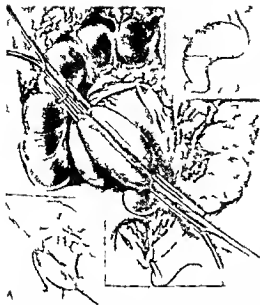


Fig. 1. An open gastroenterostomy. The mesocolon is drawn through the abdominal wall. A point on the transverse colon is selected near the greater curvature directly in line with the cardiac orifice and overlying the duodenum. From this point the clamp runs a little obliquely toward the lesser curvature. The upper grasp is about 3 in. from its origin. The distal point of the mesocolon corresponds to the point of the greater curvature of the stomach. The transverse colon is retracted by the upper grasp. The duodenum is exposed. The stomach is held in place by the lower grasp. The mesocolon is drawn through the abdominal wall.

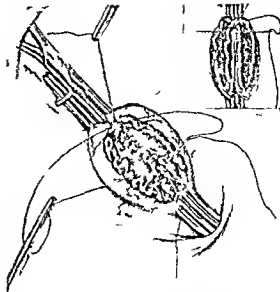


Fig. 2. The cut edges of the posterior half of the opening are sutured. The mesocolon is sutured to the transverse colon. The cut edges of the posterior half of the opening are sutured. The mesocolon is sutured to the transverse colon. The cut edges of the posterior half of the opening are sutured. The mesocolon is sutured to the transverse colon.

**GROUP 3.** Case with duodenal stricture or so-called pyloric stenosis. In this group gastroenterostomy is the ideal operation. When because of prolonged starvation and dehydration due to marked stricture the patient is in poor condition at the time of operation preliminary hypodermoclysis, blood transfusion and operation under local anesthesia will aid in obtaining a successful outcome.

**GROUP 4.** Cases in which severe hemorrhage has occurred. Gastroenterostomy is not a guarantee against recurrence of hemorrhage which may prove fatal. If the patient's condition permits excision of the ulcer area is desirable in this group. If the danger of radical excision seems too great gastroenterostomy may be sufficient or may be done as a first step of a two-stage operation. The average duodenal ulcer heals within from two to four weeks after gastroenterostomy has been performed and in cases with hemorrhage gastroenterostomy may effect a cure with return of the bleeding.

Peck describes his technique for gastroenterostomy which differs from the standard operation in a few details. An interesting point in his report is that in 96 cases there was no case of postoperative hemorrhage. Peck attributes this to the fact that he uses a simple continuous stitch for the posterior half of the inner tier of sutures taking great care to see that every stitch includes all of the layers of the stomach and gut wall that spacing is accurate and that tension is maintained constantly and is just enough for firm contact without causing blanching of the tissues. The same whip over stitch is continued back to complete the anterior tier.

Peck believes that in the various types of running mattress stitch vessels may sometimes be jumped and left to bleed. In his technique no individual vessels are caught and the mucous membrane of both stomach and bowel is purposely left redundant. So far as Peck knows there have been only two proved cases of marginal ulcer in his series. He believes that painstaking apposition of redundant mucous membrane edges safeguards against these conditions appreciably. The mortality in his series was 8 per cent. In half of the fatal cases death was due to pneumonia.



those in the patients in their primary localization progression and extent. In sections through the lesions of the rabbits large numbers of Gram positive diplococci were found.

In addition to the usual methods of treatment including the administration of iodine by mouth kaolin bismuth and olive-oil injections and topical applications mixed vaccines prepared from lesions in clinical cases have been administered to several patients with the disease. In some cases favorable results have been obtained.

The work in progress promises to aid in clearing up the etiology of chronic ulcerative colitis of the so-called idiopathic type.

Grohn B B and Rosenberg H The Medical Treatment of Chronic Ulcerative Colitis (Non Specific) *J Am Med Ass* 1924 1 x 136

Rest in bed is essential to the treatment of all of the acute forms of non specific ulcerative colitis. Heat applied by abdominal stipes electric pads and baking with electric light apparatus gives local relief and in some cases seems to exert a favorable influence on the course of the disease. A general diet containing all food elements and the vitamins containing substances is essential. The administration of bismuth subcarbonate in large doses (a teaspoonful every two hours) kaolin bolus alba or Fuller's earth often causes an amelioration of the diarrhoea with relief from the constant urge to empty the bowel. To quiet intestinal hyperperistalsis opium is the drug of choice and when used in small doses (tincture of deodorized opium 3 minims—0.2 cc—every two or three hours) it diminishes without entirely halting the intestinal motility and thus prevents the undesirable by effect of gas pains.

The local treatment consists of neutral acriflavine enemata. The best results are obtained by beginning with an enema of 750 cc of a 1:4000 aqueous saline solution given twice a day and retained each time for from ten to twenty minutes. The patient should lie in the left lateral position during the injection. An ordinary rectal tube inserted 3 or 4 in is all that is necessary to assure full contact of the solution with the colon. No other cleansing enema is required during the course of the treatment.

As the symptoms of urgency and diarrhoea abate (this usually occurs within the first or second week) the enemata may be reduced to one daily and the strength of the solution increased first to 1:2500 and in a few days to 1:500. There is no advantage in increasing the concentration to any greater degree. The appearance of granules of mucus in the colonic return calls for a diminution in the strength and frequency of the treatment.

The treatment should be continued until the temperature is normal and the diarrhoea has ceased. A neutral acriflavine solution may then be administered on alternate days and a weak solution (0.5 per cent) of sodium bicarbonate used on the inter-

vening days. The weak alkali tends to increase the antiseptic action of the dyestuff. The treatment should be continued until proctoscopic and sigmoidoscopic examinations clearly demonstrate the disappearance of all ulcerative lesions.

The accompanying table gives the results in the authors' cases in the years 1921 and 1922 when no definite aim or method governed the form of treatment and in the year 1923 when all of the patients received the neutral acriflavine treatment.

No.	1921		1922		1923		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
0	3	66	5	60	5	57	6	48

CARL D. NIMMO, M.D.

Straus A A Friedman J and Bloch L Colectomy for Ulcerative Colitis *Surg Clin N Am* 9 41 607

The authors report three cases of ulcerative colitis treated by ileostomy and colectomy. They believe that ileostomy is the ideal first step in the treatment of ulcerative colitis after medical methods have been tried. If ileostomy is performed too late there may be improvement and gain in weight as a result of the operation but the patient is apt to continue to pass blood and pus in the stools and to suffer from chronic toxic absorption from the large infected area of bowel. If ileostomy alone cannot keep the infected acid clean a combination of ileostomy and colectomy may be effectual. The authors plan to give the latter method a trial.

Because of their recent experience with colectomy they believe that it is the only rational procedure to rid the patient of a tremendous focus of infection. It can be no more logical to leave from 3 to 4 ft of infected infiltrated bowel containing pockets of pus than it would be to leave an abscessed tooth or an infected gall bladder. They are not at all convinced that it would not be better to perform the colectomy before the patient has had several years of absorption and damage to his vital organs from the infected bowel. In four or five months an anastomosis may be effected between the ileum and the remaining portion of the rectum.

STANLEY J SEEGER, M.D.

Fanle W A The Classification and Treatment of Hemorrhoids *Ann Surg* 1924 1 556

The sensory nerve supply of the anal region lies almost entirely within the anal canal.

About one half of the cases of hemorrhoids do not show either of the distinctly internal or external types but present a variation or complication of one or the other.

For the external variety of hemorrhoids the author prefers the method of dissection or excision and ligation of the vascularity with the scissors. Ligatures should be used sparingly as they cause pain. There are no vessels in the anal canal that require ligation.

In the treatment of internal hemorrhoids Fansler injects the hemorrhoid with a 5 per cent solution of quinine urea hydrochloride. Because of the associated pain and the danger of stricture formation he does not favor the use of the clamp and cautery. While the use of the cautery prevents prolapse of the lining of the rectum after the operation varicosities will often be found to lie within because they cannot protrude.

Fansler gives a description of the technique of dissection and ligation which he has employed in certain selected cases.

WILLIAM J. PICKETT, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Ottenberg R., Rowenfeld S. and Goldsmith L.  
The Clinical Value of the Serum Tetra chlorophenolphthalein Test for Liver Function  
*Arch. Int. Med.* 1924, x, 2, 6

In 103 cases Rosenthal's method has proved a valuable index of liver function but its use has sharp limitations—it is valueless in cases of obstructive jaundice.

After relief of transient obstruction the ability to excrete the dye returns promptly but after obstruction lasting longer than a week return of function may be delayed for days or weeks.

Slow recovery results also after lobar pneumonia.

The test was found useful in detecting liver disease in sixteen cases most of which were cases of cirrhosis, metastatic carcinoma and cardiac decompensation. Its greatest value will probably lie demonstrated in the early diagnosis of liver metastases and cirrhosis of the liver. In eighteen cases in which findings other than jaundice suggested liver disease the test proved useful in excluding such a condition.

There were no false positive results. Two cases of duodenal ulcer showed slight retention. This together with the fact that in one case of cirrhosis autopsy revealed a healed duodenal ulcer suggests chronic local infections as a possible cause of cirrhosis.

In five cases of proved liver lesions the test failed. Three were cases of hepatic syphilis in adults. One was a case of very small cancerous metastasis and one a case of extensive liver metastases. In the last mentioned case repeated tests gave negative results.

A positive test always means serious disability and to the absence of bile-duct obstruction a serious lesion of the liver. A negative test however does not always exclude the presence of serious liver lesions. The authors regard 5 per cent of the dye in one hour serum as suspicious and over 8 per cent as conclusive of impairment of liver function.

The simplicity of the test and the fact that absorption from the intestines and excretion by the kidneys are not complicating factors recommend it for clinical use.

CYRIL J. GILL, M.D.

Ca. J. T. and Warthin A. S. The Occurrence of Hepatic Lesions in Patients Treated by Intensive Deep Roentgen Irradiation  
*Am. J. Ro. Ig.* 1924, xii, 27

In three cases of abdominal malignancy treated by Essent the Battle Creek Sanitarium with massive deep roentgen ray irradiation autopsy revealed remarkable lesions in the liver of a type and distribution which made it practically certain that they were the direct result of the irradiation. The treatments varying in number and distribution over a period of time were given in fifty to 100 minute exposures at 50 to 70 cm. through 1 mm. copper plus 5 mm. sole leather and 1 mm. aluminum filter with an effective voltage of 200,000.

From their study of these three cases the authors conclude that deep roentgen irradiation of the abdomen of a degree producing well marked roentgen sickness produces lesions not only in the gastrointestinal mucosa but also in the epithelium of the biliary tract particularly in the medium sized and smaller bile ducts. This injury is evidenced by vacuolation, swelling and necrosis of the epithelial cells of these ducts and by a slow and atypical regeneration attended by the formation of syncytial giant cells, blocking of the ducts and resulting bile stasis and bile hemorrhage. In addition there is some injury to the liver cells at the periphery of the lobules but the microscopic evidences of this are much less distinct than those of the damage to the bile ducts. The liver cells appear to be more resistant to irradiation than the bile duct epithelium. The hepatic as well as the gastrointestinal injury must be considered a possible factor in the production of roentgen sickness.

CARL D. NEIGHOLD, M.D.

Walters W. and Bawler J. P. The Preoperative Preparation of Patients with Obstructive Jaundice. An Experimental Study of the Toxicity of Intravenous Calcium Chloride Used in the Preparation of Patient S. J. Gynec. & Obst. 19, 4, 222, 00

During the last three years the intravenous administration of calcium chloride has become established in the Mayo Clinic as a routine procedure in the preoperative preparation of patients with obstructive jaundice. That it is a factor in the reduction of the surgical mortality in this group of cases is shown by the operative mortality for 1922.

The possible occurrence of toxic effects in the course of obstructive jaundice is generally accepted. The incidence of renal and hepatic insufficiency in these cases at the Mayo Clinic has been reported. The two may be easily differentiated: the renal insufficiency being associated with changes of the drainage of bile and evidence in the urine of a progressing nephritis and a steady rise in the blood urea level. This renal complication has occurred in postoperative convalescence in cases with and without a preoperative course of intravenous calcium chloride. Renal insufficiency following the

intravenous administration of calcium chloride give rise to the question as to its toxicity. In this study the attempt was made to include or exclude intravenous calcium chloride as a factor in the production of such nephritis.

In the routine preoperative preparation of patients with obstructive jaundice a 10 per cent aqueous solution of calcium chloride is given intravenously daily for three successive days at the rate of 5 c.c. for each 60 kgm. of body weight to patients within the normal range of adult body weight. Such a series of injections has been called a therapeutic course. Reducing this dosage to 1 unit for each kilogram of body weight 8 mgm. of calcium chloride for each kilogram were administered to the dogs used in the study. All necessary surgical procedures on the animals were carried out under ether anesthesia and with the employment of sterile technique. The various determinations made in the investigation were: (1) the rate of excretion of calcium chloride from the blood stream after its intravenous injection in various amounts; (2) the lethal dose of calcium chloride injected intravenously into normal and jaundiced dogs; (3) the effect on the kidneys of normal and jaundiced dogs of the injection of calcium chloride; and (4) the effect on the hearts of normal and jaundiced dogs of intravenous injections of calcium chloride.

The following conclusions are drawn:  
1. Following its intravenous injection in a 10 per cent aqueous solution calcium chloride is rapidly eliminated from the blood stream and shows no tendency to accumulate in the blood. Following the therapeutic doses used in the experiments reported the blood calcium content returned to its normal level within 10 hours.

2. The lethal dose of calcium chloride administered intravenously in 10 per cent aqueous solution at a uniform rate of 1 c.c. a minute was 256.4 mgm. for each kilogram of body weight in normal dogs and 386.6 mgm. for each kilogram of body weight in jaundiced dogs.

3. Following continued injections of calcium chloride including therapeutic doses given to normal and jaundiced dogs no evidence of a toxic effect on the kidney could be demonstrated in any cases by microscopically.

4. The cardiac effect of the therapeutic doses of calcium chloride used in the study reported was still production of various alterations in the pulse rate. Toxic doses caused disturbances of conduction and ectopic origins of impulses and when carried to the point of greater toxicity produced cardiac paralysis on which was followed by death.

J. D. E. S. and B. D. N. G. Preoperative Stricture of the Common Bile Duct. (S. 1941, 20)

Preoperative stricture of the common duct is usually the result of operative trauma. It may also be caused by infection, necrosis of the wall of the duct. The symptoms may be those of pe-

nient or intermittent biliary obstruction and often suggest stone in the common duct.

The patient is very ill and a grave surgical risk because of jaundice, cholangitis and impairment of the function of the liver. The site of the stricture is usually at the junction of the cystic and common ducts.

Operation should provide biliary drainage and restore the normal course of the bile.

The results of operation are fairly satisfactory, considering the hazard and technical difficulty and the otherwise almost hopeless nature of the condition.

Griffiths, H. E. Further Relationships of Diseases of the Gall Bladder to the Secretory Functions of the Stomach and Pancreas. (L. 1944, 103)

The author reviews briefly the intricate lymphatic and nervous connections between the gall bladder, stomach, duodenum and pancreas. The lymphatic vessels of the gall bladder extend downward along the common bile duct and before terminating in the retropancreatic lymph glands anastomose with those of the first portion of the duodenum and the head of the pancreas. Hence a route of infection is readily demonstrated between the gall bladder, duodenum and pancreas.

The vagus is the motor nerve as well as the secretory nerve to the gall bladder and bile passages. The pancreas derives its nerve supply from both the sympathetic and vagus. Clinically the close association of the gall bladder, pancreas, pylorus and duodenum is best shown by pylorospasm.

In investigating the secretions of the stomach and pancreas Griffiths made analyses of one hour test meal using as the standard meal 1 pt. of weak tea without sugar or water and 2 oz. of toast. The stomach residuum was a curd through the stomach tube one hour later and tested for free and total acidity, mineral chlorides and digestive activity.

With the use of the test meal hyperchlorhydria associated with regurgitation was found in 90 per cent of the cases of cholecystitis with or without the presence of gall stones. A review of the literature shows absolutely contradictory results. Irritation of the mucosa of the gall bladder causes a reflex irritability of the vagus which produces an increase in the amount and acidity of the gastric juice, relaxation of the pylorus and duodenal regurgitation.

The clinical features of catarrhal pancreatitis are periods of attacks of nausea and vomiting associated with diarrhoea and bulky stools laden with undigested fat.

At operation the head of the pancreas is found swollen and red and the condition appears probably to be an inflammatory process. In the greater percentage of cases the infection is primary in the gall bladder and is carried to the pancreas through the lymphatics. Acute pancreatitis is generally a sequel of pancreatic lymphangitis.

John W. N. New, M.D.



Blackford J M and Dwyer M F Gastric Symptom with Particular Reference to Gall Bladder Disease *J Am Med Ass* 1924 LVIII 412

The authors review the findings in 1650 cases with gastric symptoms

Appendicitis may be followed by or coincident with peptic ulcer or cholecystitis but its relief will not cure a lesion in the upper abdomen even though the latter was caused by it In many cases of this type poor surgical results are being avoided by better clinical diagnosis and the use of a large abdominal incision

Eleven per cent of the patients with dyspepsia were found to be suffering with peptic ulcer and 3 per cent from gastric carcinoma The ratio of gastric to duodenal ulcer was 1.6

The approximate relative frequency of abdominal organic disease causing dyspepsia in the series of cases reviewed was gastric ulcer one gastric carcinoma 1.6 reflex appendicitis four duodenal ulcer six and gall bladder disease twelve

Dyspepsia in adults was attributed to gall bladder disease in nearly 20 per cent of the cases

In most cases of gall bladder dyspepsia the diagnosis must still be made by the older clinical methods

Dyspepsia is caused by general systemic diseases in approximately 20 per cent of cases

In approximately 4 per cent of the cases the authors were unwilling to hazard a diagnosis of the cause of the dyspepsia O C and E Nadeau M D

Kaplanow R Engle L P and Harvey S C Intra Abdominal Biliary Exclusion from the Intestines Cholecyst Nephrostomy A New Method *Surg Gy & Obst* 1924 XXIX 6

Many different methods have been devised for excluding bile from the intestinal tract The physiology of bile its metabolic function and whether or not it is essential to life are problems of great importance Most of the operative methods of bile exclusion have been attended with the danger of infection of the biliary passages

The authors describe a new method of intra abdominal biliary exclusion whereby the bile may be diverted from the intestinal tract for long periods of time without incurring any of the difficulties of previous methods This new operation consists essentially in the anastomosis of the gall bladder to the pelvis of the right kidney and the ligation and division of the common duct It may be performed in one or two stages Through a high right rectus incision on the gall bladder is exposed and freed from the liver bed to within 1 cm. of the junction of the cystic and hepatic ducts The right kidney is then freed from its bed and a longitudinal incision is made through its cortex down to the pelvis An opening from 1 to 2 cm in diameter is next made through the most dependent portion of the gall bladder and the circumference of the new stoma is sutured into the kidney pelvis by a series of mattress

sutures through the entire thickness of the kidney The second stage of the operation consists in isolating and ligating the common duct

Bile immediately appears in the urine while the animals retain their pre-operative weight and general good health The stools are clay colored being free from bile pigment The cholelithostomy is soon covered by a thin capsule like layer of adhesions The right kidney atrophies only a shell of renal tissue remaining and the left kidney undergoes compensatory hypertrophy Microscopic study of the urinary bladder kidney and liver have revealed no evidences of infection

This new method does not permit determinations of the total biliary output but it allows pigment studies and insures a biliary fistula free from infection and with none of the difficulties of dressings or collecting apparatus

JOHN W. NUTTY M.D.

Eggers C Acute Pancreatitis *A m S R* 1914 LXIX 193

Two theories regarding the cause of acute pancreatitis are (1) That it is due to the entrance of bile or duodenal contents into the pancreatic duct and (2) that it is an infection carried to the pancreas by means of the lymphatics Both of these presuppose a bacterial invasion In the author's opinion this is incorrect Eggers presents the histories of six rather carefully observed cases which seem to support his belief that acute pancreatitis is the result of the action of liberated pancreatic ferments on the surrounding tissue and that infection has nothing or little to do with it

All of the patients were stricken suddenly when they were apparently in excellent health and the symptoms were at once referred to the upper abdomen There was no early elevation of the pulse rate or temperature and no acute inflammatory signs were observed in any organ at the time of operation Cultures taken from the peritoneum and retroperitoneal tissues were sterile

Eggers believes that the gall bladder and bile are probably concerned in some way in the development of acute pancreatitis Whether the bile enters the pancreatic duct or whether the duct becomes temporarily obstructed using increased pressure and subsequent rupture is impossible to state It is also impossible to state whether or not bile is able to produce acute pancreatitis Alcoholism obesity pregnancy etc are merely contributing factors in the etiology but certainly are of no value in the chemical alteration of the bile or in the spasm of the sphincter and congestion of the liver

The most important and persistent symptom is severe colicky pain in the epigastrium Vomiting is usually present and symptom of chills are frequently noted The clinical picture is as compared with the severity of the symptoms is characteristic While the severity of tenderness over the upper abdomen is the least remarkable feature

Acute pancreatitis is most commonly mistaken for cholecystitis peritonitis from perforation of a viscus and acute ileus. The difference in the intensity of the symptoms and the slight distention of the abdomen with only slight or no rigidity and the absence of obstipation should suggest acute pancreatitis especially in the case of an obese patient who was healthy previously and was seized with the attack after a heavy meal.

The treatment is surgical whatever the stage of the condition. Relief of the tension in the pancreas during the early stage of the disease and drainage of the peritoneal exudate which is extremely toxic and responsible for the general symptoms is accomplished by surgical measures. The best approach is through a median or right rectus incision. Large sponges are used to absorb the exudate and gauze tampons are inserted directly into the pancreas and the retroperitoneal space for drainage. If the gall bladder is diseased and if the patient's general condition will allow the operation a cholecystectomy may be done as associated gall bladder pathology may be the cause of subsequent attacks.

The prognosis depends upon the time at which operation is performed. It is best if only a portion of the gland is involved and especially if the tail instead of the head is affected. Recovery from the acute attack may take place without operation. Death is usually due to poisoning by decomposition products of the pancreas or a toxæmia produced by fat necrosis.

CYRIL GLASPEL M.D.

Peck C. H. Tuberculous Cyst of the Spleen  
Splenectomy Recovery. *S. & Gy. & Ob.*  
19 4 XXXX 16

Primary tuberculosis of the spleen a rare but distinct entity is curable by operation in favorable cases. Without splenectomy a fatal termination is inevitable.

Splenectomy is indicated in certain cases of secondary tuberculosis of the spleen when the splenic lesion is predominant and the supposed primary lesion is a healed tuberculosis or may be cured.

Polycythæmia occurs in a certain percentage of cases and probably adds to the gravity of the prognosis but does not contraindicate operation when the splenic tubercle is the dominant factor. The prospect of a complete cure and restoration to health of patients surviving splenectomy is demonstrated by several case reports.

Peck reports a careful study of a new case.

S. MULL KAHN M.D.

Larrabee R. C. Splenectomy Its End Results and Clinical Indications. *Am. J. M. S.* 19 4  
1 71 47

Splenectomy is indicated in most cases of clinical splenic anemia but as many persons with this condition who are not operated upon live in comfort for years it is reasonable to postpone operation until the anemia becomes incapacitating. Even

after ascites and gastric hemorrhages have begun operation will often result in a clinical cure. In hæmolytic jaundice operation is generally indicated in the acquired and sometimes in the congenital cases and gives complete relief.

In alcoholic and other cirrhoses of the liver surgery is indicated only in selected cases—chiefly those in advanced stages with ascites. As the effects of splenectomy are probably for the most part purely mechanical the best results will be obtained when the spleen is unusually large and the relief to the portal circulation is correspondingly great. If such cases show anæmia and leucopenia they are clinically indistinguishable from if not pathologically identical with cases of Banti's disease and splenectomy is indicated very definitely.

In Gaucher's disease splenectomy is generally advisable and in von Jaksch's disease it is sometimes necessary. The enlarged spleen sometimes seen in syphilis, malaria and other chronic infections is not always innocuous and in certain reported cases its removal has been followed by marked improvement.

It is generally recognized that splenectomy is contra-indicated in leukaemia. Few patients have survived the operation and even when skilled surgery has given a successful operative result there has been little or no improvement in the patient's condition.

Primary polycythæmia is another condition frequently associated with splenomegaly in which splenectomy is contra-indicated on both theoretical and clinical grounds. With regard to the advisability of this operation in pernicious anemia opinions differ. It may be safely said however that while splenectomy has a place in the treatment of this disease its value is limited and the results it gives are not at all comparable with those obtained in such diseases as splenic anemia and hæmolytic jaundice.

A delay of several months is generally advisable. Other wise one may find out too late that he has mistaken leukaemia in an aleukæmic stage for Banti's disease or polycythæmia for hæmolytic jaundice.

WARRIS H. KAHN M.D.

Pool E. H. Splenectomy for Splenic Anæmia  
Continued Hæmatemesis Due to Thrombosis  
of the Splenic Vein. *Am. J.* 1914 XXX 155

Pool reports the case of a man 24 years of age who vomited blood when he was 12 and 19 years old and developed a mass in the left upper quadrant of the abdomen with increasing anæmia. Transfusion was followed by splenectomy in the patient's nineteenth year. Five years later there was epigastric distress with nausea, hæmatemesis and secondary anæmia. Transfusion performed twice was followed by fever, further hæmatemesis and epigastric pain. At exploratory laparotomy the omentum was found to be of a peculiar white color. A section removed for microscopic examination showed bands of mature fibrous connective tissue and several

large blood vessels partially obliterated by what was apparently an organized canalized thrombus

MORRI H KAHN M D

### MISCELLANEOUS

Carman R D and Fineman S The Roentgenological Diagnosis of Diaphragmatic Hernia with a Report of Seventeen Cases *Radolgy* 194 111 26

The authors report seventeen cases of diaphragmatic hernia studied roentgenologically at the Mayo Clinic. The incidence of diaphragmatic hernia has been one in about 23 000 patients examined. As a rule the roentgenological demonstration of a diaphragmatic hernia offers no difficulties. Occasional failures to demonstrate the condition at the first roentgenological examination may be explained on the basis of five factors: (1) its development as a late sequel to paradaphragmatic purulent processes; (2) its development from trauma or lacerations of the diaphragm months after the injury; (3) the occurrence of spontaneous temporary reductions; (4) the roentgenological demonstration of only one of a double hernia; and (5) failure of the opaque medium to pass through the diaphragmatic opening because of strangulation or because of the patient's position during the examination.

Solid viscera alone may form the hernial contents. In such cases the oral or rectal administration of a barium suspension cannot reveal the presence of a diaphragmatic hernia. Hernia of the kidney may

sometimes be demonstrated with the aid of pyelography.

While the roentgenological diagnosis of diaphragmatic hernia is usually simple and conclusive it is not infallible. After the administration of an opaque medium diaphragmatic hernia must be distinguished from mechanical elevation and true eventration of the diaphragm, hour glass stomach, and oesophageal diverticula. The length of the oesophagus should be determined roentgenologically. In one of the cases reported the oesophagus was probably of the so called congenital short type. In such cases reduction cannot be effected surgically.

Roentgenological studies of the thorax are commonly made in cases of diaphragmatic hernia because the symptoms are often referable to the chest. Roentgenograms of the chest may exhibit fair evidence of the presence of abdominal viscera within the chest but in some instances such evidence is extremely slight and consequently the hernia may be mistaken for one of a number of conditions commonly seen in the chest. A series of roentgenograms showing such similarity is presented. Pneumoperitoneum may be of aid in the diagnosis and differentiation of diaphragmatic hernia.

In all cases an endeavor should be made to determine the exact site of the hernial opening. The determination of this point is of importance to the surgeon in his choice of operative approach. Cooperation between the clinician and roentgenologist is necessary for the best results in the diagnosis of diaphragmatic hernia.

## GYNECOLOGY

## UTERUS

Zimmermann R. The Relative Value of Operations for Correcting the Position of the Uterus (Beitr. g. zu Be. tu. g. d. r. O. g. g. atione. Lage korrekturen. Uterus) Zf. h. f. G. b. i. h. G. v. h. 1923 LXV. 537

Zimmermann compare the Alexander Adams Olschaw and Leopold Czerny and Baldy operations for the correction of retro version of the uterus on the basis of the results in 386 cases operated upon in the course of three years. Of 28 cases in which the placenta was adherent 216 cases in which it was mobile 70 cases in which it was adherent 13 cases in which it was mobile 175 cases in which it was adherent (The figure in this article do not agree)

With regard to the technique the author states that for disinfection of the field of operation 5 per cent tannin alcohol was used in stead of tincture of iodine as it appears to have a more favorable influence on wound healing.

The conditions essential for the Alexander Adams operation are free mobility of the uterus, absence of adhesions, descensus and normal dexta. Zimmermann does not favor a unilateral operation. In 19 cases is the period of healing ranged from eighteen to twenty-one days. The course seemed to be somewhat better when the operation was performed under general anesthesia than when it was done under local anesthesia (sound criticism in cases and postoperative hematoma in one case of the sixty-eight cases operated upon under general anesthesia would infection in six and postoperative hematoma in three cases of the fifty cases operated upon under local anesthesia).

With regard to the original pronunciation at the same time the author illustrates the frequency of position amputation - thirty four in the 118 cases. The primary orthopedic result was good in all except three. The final result was good even in the three exceptions. The functional results are satisfactory except in three cases and the late results were good in all. The prognosis is determined with comparatively few exceptions. Only a relatively small number of the cases.

For complete information, flexion, and sing, vmp  
toms the Alexander Ad m p r i o n s the pr  
cedure of choice.

signs of the disease are mentioned. It is a prerequisite for the use of any inflammatory process of the adrenergic system should be made to make sure that the patient is not inflamed.

Abdominal fixation by Olshausen's method was done 32 times—twenty-four times for mobile retro-

fixation twice for relapse following a Baldy operation sixteen times when there was complicating adnexal disease and six times in apparent fixation caused by traction of the corpus of the retroflexed uterus on the smooth peritoneum of the pouch of Douglas. The other complications of adherent retroflexion were adnexal disease in sixty seven cases chronic pelvic peritonitis in thirty four cases chronic appendicitis in twenty four cases and myoma in one case. A median longitudinal incision was made with splitting of the posterior rectus sheath and transverse penetration of the uterine attachment of the round ligament according to Henskel's method usually under general narcosis. The length of time the patient was confined in the hospital was about three weeks. At the end of this time the orthopedic results were good except in two cases and in the few exceptions the symptoms were relieved.

In twenty-two women examined from two months to five years after the operation the position of the uterus as correct in 97 per cent. There was one relapse due to separation of the uterus and one retroflexion of an anteverted uterus. In 9 per cent the functional result was unsatisfactory but the rest of all cases with severe adnexal complications at the time of operation. The trouble may have been only a stump exudate in which case improvement may still be looked for. Dysmenorrhoea and in sthenic women constipation remained uninfluenced. There was no death and no case of illness caused by adhesion.

The Leopold Czerny operation should be employed only when sterility is positively assured. In this procedure the uterus is fixed by the broad surface of the fundus instead of by the uterine end of the tubes in an Olhausen method. In sixty-five cases—thirty with moderate retroflexion—the operation was performed primarily for the displacement only. In forty-nine cases the indications were pyosalpingitis and other inflammations of the annexa. There were no deaths but twenty-six women had a stump exudate on the discharge from the hospital.

Examination from one to three years after the operation showed that among thirty nine patients there was only one relapse. In twenty four (62 per cent) there was a complete cure and in thirteen (33 per cent) in two cases the symptoms persisted as the result of the previous severe disease of the adnexa.

Baldy's operation, which agrees in its essential with the procedure described independently by Frankel, was performed on twenty-two women. The round ligaments were drawn through the broad ligament and sutured to the posterior surface of the uterus and at the same time the two loops were sutured together. Disease of the adnexa or a tumor was present

ent in twenty of the twenty two cases of mobile retroflexion and in twenty three of the cases of adherent retroflexion. In most of the cases the operation was associated with a complicated procedure on the uterus and in twenty five cases with appendectomy. Many of the patients had a stump exulcerate when they were discharged from the hospital and in some instances this was due to a hematoma in the perforated broad ligament.

The immediate orthopedic result was good; there was only one relapse but in the examination of thirty six women from one to three years later not fewer than ten (38 per cent) were found to have a relapse. The latter were subjected to a second operation performed by the Olshusen technique. Zimmermann seeks the cause of the frequent relapse in the extensibility of the round ligaments from which the uterus is suspended and thus exposed to pressure from in front and behind.

In addition to the cases Zimmermann has operated for retroflexion by intraperitoneal reefing of the ligament in six cases of mobile displacement and six cases of adherent displacement. In five of the women who returned later for examination a satisfactory functional and orthopedic result was found.

FLEISCH (G)

### Hirst B C Surgical Treatment of Complete Uterine Prolapse 1913 *Am J* 19 4 691

Prolapse of the uterus is dependent upon an injury to or overstretching of the cardinal ligaments in the basis of the broad ligaments and a similar traumatism to the uterine sacral ligaments.

In every operation for prolapse of the uterus there are three factors to be taken into account: correction of the defect in the two sets of ligaments which support the uterus in its proper position and incidentally as there is so often an associated rectocele and cystocele the proper operative procedures for these defects performed separately. The author describes the technique of shortening the cardinal and uterosacral ligaments.

In discussing the repair of the posterior vaginal wall and pelvic floor Hirst emphasizes the fact that the tear in the rectovaginal fascia is at right angles to the tear through the triangular ligament. This must be borne in mind when the stitches are inserted.

The huge dilatation of the rectum accompanying rectocele must be corrected by proper restoration of the rectovaginal fascia and the triangular ligament and by keeping the rectum in its proper position and preventing its undue distention. Such measures will restore the contractile power and diminish the abnormal capacity of the bowel. Electrical stimulation should be continued for some time after the operation. ROLAND S CROV MD

### Johnstone R W Adenomyoma of the Uterus with Tuberculous Infection *J Obst & Gynec* 1914 *Emp* 9 4 243

The author describes the specimen in the case reported as a uterus presenting simultaneously (1)

two diffuse adenomyomatous tumors in its posterior wall which were clearly of endometrial origin and (2) disseminated tuberculous infection of the endometrium, the muscular wall, the tumors of the left tube and possibly also the right tube.

As there was no trace of peritoneal tuberculosis in the specimen as no sign of peritoneal involvement was noted at the time of operation and as the tuberculous infection was much more marked in the uterus than in the tubes the infection was probably blood borne and secondary to an old tuberculous focus in the lungs. The author assumes also that the entrance of the tuberculosis into the tumor was favored by the glandular prolongations into the adenomyoma.

ROLAND S CROV MD

### Cron R S End Results in the Treatment of Carcinoma of the Cervix 1913 *Am J* 9 4 18

In 380 cases of cervical carcinoma admitted to the obstetrical and gynecological department of the University of Michigan for diagnosis the condition was in the early stages in only sixty. In the remaining 320 it was regarded as far advanced or at least inoperable from the standpoint of a radical Wertheim operation.

Approximately one half of the patients were given some form of treatment. Ten or more agents were used in attempts to destroy the disease which later destroyed the host. Radium was not available for treatment. Eighty five patients were treated.

Every patient except one eventually died directly or indirectly from the uterine malignancy. The one exception was a woman 60 years old who is alive and in good health three years and eight months after the excision of the cancerous tissue and cauterization of the cervix. The best results were obtained with the actual cautery. The results were not improved by the adoption of the Percy technique. The profuse and foul discharge and frequent bleeding were relieved temporarily.

Of the sixty patients with early carcinoma who were subjected to a radical abdominal operation eighteen (40 per cent) are living and well five or more years after the operation. There was a primary mortality of 26.6 per cent due to shock, and without hemorrhage. Sixty per cent of the patients surviving the operation were permanently cured.

The article is summarized as follows:  
1. The life of women with advanced carcinoma of the cervix treated with pelvic irradiation and actual cautery is ultimately lengthened although the vaginal discharge and bleeding may be temporarily relieved.

2. The percentage of cures in women with early carcinoma who survive the radical abdominal operation is favorable. However when all cases of cervical carcinoma are considered the result from surgery alone remains discouraging.

3. Deep high voltage X-ray therapy gives excellent pathological results and in advanced cervical carcinoma has replaced surgery.

4 Radium and the X ray should be used in all cases of cervical cancer

5 Whether in early cancer a combination of radium and the X ray and surgery will give better end results than radium and the X ray alone is still a disputed question

6 Publicity and propaganda have not materially influenced the incidence of early and late cervical cancer

### MISCELLANEOUS

Dannreuther W T The Incidence and Significance of Urogenital Symptoms in Gynecological Patients *Am J Obst & Gyn* 1924 103

A study of 600 consecutive private case records indicates that in approximately 30 per cent of gynecological cases a cystoscopic examination is necessary for the establishment of a diagnosis. About 15 per cent of gynecological patients have some definite lesion of the urinary tract. A large number are deprived of prompt relief from symptoms because so many practitioners are willing to treat a woman for cystitis without actually demonstrating an inflammation of the bladder.

It is imperative for the gynecologist to have a working knowledge of cystoscopy. All gynecological patients should be catheterized on their first visit. Valuable information can be obtained from inspection of freshly catheterized urine. A renal function test should be made before most elective gynecological operations.

Pelitis occurs frequently in women and is often overlooked. In cases of inflammation limited to the bladder fever is conspicuous by its absence. In a small percentage of cases only urinary symptoms are caused by pelvic lesions without associated disease of the urinary tract. Occasionally cases are encountered in which the urinary symptoms are due to causes remote from the urinary and pelvic organs. No urinary symptom or syndrome is pathognomonic of anything; the diagnosis rests almost entirely upon the objective evidence.

Of the 119 patients constituting the basis of this investigation, fifty-three had urinary symptoms only and sixty-six had both urinary and pelvic symptoms. The fallacy of relying upon the symptoms for diagnosis is well illustrated by the causative factors discovered. These were lesions of the urinary tract in fifty-one cases, lesions of both the urinary and pelvic organs in forty-four cases, lesions of the pelvic organs only in fourteen cases, and remote lesions in ten cases.

LOW RD L COX FLL MD

Galletly A Presacral Tumors of Congenital Origin *J Obst & Gyn & B & Emp* 1924 221

The author reports a case in which a cyst composed of a pelvic portion and a large gluteal portion which were constricted from each other by the margin of the sacrospinous foramen was removed by

abdominal incision combined with an incision through the right gluteus maximus muscle.

The possible sources of presacral tumors of congenital origin are (1) dichotomy of the fetal axis with the production of (a) monster formation or (b) a separated embryo which later becomes parasitic and blends with the autosome or (2) included in the autosome (1) a growing point cell (3) a wandering totipotential sex cell (4) a secluded notochordal cell (5) a secluded cell of the neural tube (6) the postanal gut (a) persistence and continued growth of an embryonic remnant or (b) secluded cell of the postanal gut and (7) the neurenteric canal.

In Galletly's opinion the source in the case reported was one of the last two mentioned.

ROLAND S CROW MD

Clark J G Radium in Pelvic Carcinoma I *S & G* 1924 155 38

As the result of a study of cases of pelvic carcinoma in which a five year cure was obtained by radium therapy the author uses 100 mgm of radium for twenty-four hour application. He sometimes makes two applications but never three. He practically never applies radium without anesthesia and he always thoroughly packs the vaginal wall. Since 1920 he has not had a fistula following radium treatment.

In conclusion Clark presents the statistics of various gynecologists who have used operative measures for the relief of carcinoma and proves that the end results were no better than those of radium and economically not as satisfactory.

ROLAND S CROW MD

Cullen T S A Few Practical Points in Pelvic Surgery *Am J M J* 1924 221 69

The author calls attention to the fact that profuse hemorrhage may occur from injury to the labia and that it should be controlled by the use of non-absorbable sutures. He advises poster or vaginal section for cases of doubtful pelvic pathology and suggests that when laparotomy is done the vaginal incision be used for drainage.

A wound that separates with hemorrhage after a perineal or cervical operation should be resutured. The author uses a cautery knife when excising the margin of carcinoma of the labium.

Postoperative bleeding from the cervical stump can be controlled by thorough and through catgut sutures inserted by way of the vagina.

Menorrhagia in the child-bearing age is most common due to hyperplasia of the endometrium and can be cured by repeated curettage, radium therapy or hysterectomy.

Multilocular cystadenoma when adherent to the bowel should be separated by leaving a part of the laminated cyst wall attached to the intestine.

The author next discusses various methods of handling myomata of the uterus offering such suggestions as myomectomy, bisection, amputation at the internal os first and methods of caring for the

uterus. He recommends temporary packing for the control of oozing. When removing a pus tube and leaving the uterus he removes the uterine cornu in order to reach all abscessed areas. In inflammatory conditions of the pelvis he employs blunt dissection.

In infections of the broad ligament occurring after the puerperium the focus should be opened up by a gridiron incision and drainage should be placed retroperitoneally down to the induration. The cul de sac of Douglas should not be opened in these cases of infection.

Attention is called to the tape method of exposing a retrocecal appendix in the use of a median supra-pubic incision.

Cullen next describes a method of operating upon a malignant mass composed of pelvic organs and intestines. To obtain his bearings in untangling a libert bowel with multiple fistulae the surgeon should go down to the handle of the fan—the mesentery.

When a patient has rectal discomfort during menstruation and a nodule back of the cervix the possibility of adenomyoma of the rectovaginal septum should be considered.

In conclusion Cullen emphasizes the importance of all possible conservation in pelvic surgery.

ROLA D S C O'S M D

# Smith H I The End Results of a New Uterine Shelf Operation for the Relief of Cystocele S I Cy c Obs 1942 1 100

The operation described by the author for the relief of large protruding cystocele consists in anchoring the cervix to the triangular ligament by catgut and silk worm sutures after denudation of the external mucous membrane. From the end results in forty cases the following conclusions are drawn.

The operation is lessened by the

The bladder supported by the uterus as a shelf is permanently retained in the correct position.

The symptoms whether due to dragging down or irritation of the bladder are completely relieved in at least 95 per cent of the cases.

The best results are obtained as would be supposed when the uterus is supported by the sort of intra abdominal operation.

Thorough repair of a torn or relaxed perineum and any complicating rectocele is essential. Great relief can be expected even in cases in which the condition does not warrant opening the abdominal cavity.

The fixation of the uterus is usually successful and it does not produce any discomfort. On the contrary it often followed by an unexpected relief of the

Advanced age seems to be no bar to the operation.  
ROLA D S C O'S M D

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Findley P. Hemorrhages of the Pregnant Uterus  
*Vol 12, No 1, 1924, 18-29*

Hemorrhage caused by abortion is more apt to be intractable during the third and fourth months of pregnancy than at any other time. The reason is to be found in the fact that at this stage the perimetrium and amniotic layer which is the natural point of cleavage in the mature placenta has not been developed and the chorionic villi hold fast to the uterus.

The premature separation of the placenta is much more frequent than has been thought. This is evidenced by the frequency of old blood clots on the placental surface. It is important to remember that the amount of blood showing externally is not an accurate indication of the amount of hemorrhage as a considerable quantity of blood may be held back by the head or breech impaction at the birth canal. Of greatest value is the finding of enlargement and tenderness of the uterus in association with general signs and symptoms of a severe hemorrhage which are out of proportion to the evident loss of blood. The absence of fetal heart tones indicates a complete separation and the need for cesarean section.

The hemorrhage of placental praeparation is caused by the retraction of the fibers of the lower segment of the uterus without a corresponding increase in the placental area and the opening of the cervix which severs the attachment of the placenta. In the author's opinion the treatment of choice in the majority of cases and under all circumstances is the introduction of a vaginal pack of sterile gauze followed by internal pelvic version and manual delivery.

Hemorrhage during pregnancy is seldom due to uterine fibrils as these grow this usually prevent pregnancy.

Cancer of the uterus is rare in the childbearing age and when it occurs in the cervix seldom permits pregnancy. *J. C. R. B. L. L. S. L. V. M. D.*

## LABOR AND ITS COMPLICATIONS

Guthrie J. T. McKenzie R. A. and H. D. on  
 F. J. P. In L. Childbirth by Synergistic  
 Methods (S. C. and Paper) 1. J. (B. & G.)  
 94 54

The technique described consists of one to three hypodermic injections and one rectal instillation. The first hypodermic injection is given at the same time as in the Fr. burg method i.e. after labor is well on its way when the patient is in the first or second stage and lasting thirty or more minutes. It consists of 1/4 gr. of morphine dissolved in 2 c.c.

of a 50 per cent solution of magnesium sulphate. No morphine is given later. The rectal instillation is 2 1/2 oz. of ether with 10 gr. of quinine hydrobromate in 2 fl. oz. of alcohol with enough olive oil to make 4 oz. The doctor or nurse comes in contact with the patient only four times at the most and often only twice. The magnesium sulphate in 2 c.c. ampoules of 50 per cent strength. If the first hypodermic injection has a marked sedative effect the instillation is delayed possibly one or two hours but if it does not have such an effect the instillation is given within from fifteen to twenty minutes. As a usual when any retention enema is given the patient should lie comfortably on her left side the catheter should be inserted 4 in. in the rectum from three to ten minutes should be taken for the instillation and the catheter should then be gently withdrawn. The synergistic effect of the drugs is usually noted within fifteen minutes the patient becoming very quiet and sometimes sleeping. Even an exhausted woman may be lightly anesthetized but the ideal condition sought is analgesia with unconsciousness.

The effect continues for about four hours but if it is insufficient one or two additional hypodermic injections of 2 c.c. of 50 per cent magnesium sulphate will deepen it. Pain is eliminated contractions continue labor is not delayed and the memory of the patient is either clouded or completely obliterated. Sometimes no anæsthetic is necessary even when the head is passing over the perineum and sometimes no supplement is required for an episiotomy the repair of lacerations or other necessary work. The mother may not be aware of the birth until she is told of it.

As with all drugs or systems the effect varies with the individual patient her confidence in the doctor the maintenance of quiet the gentleness of the manipulations and other factors. Loud talking the rattling of pans and thoughtlessness in other ways will mar what under other circumstances might be an ideal result. The method has been tried in 300 cases.

This procedure must not be confused with oil ether anesthesia. In Thaler and Hulst's series of cases in which only oil ether was used the dose was repeated twice in twenty five cases three times in twenty cases four times in fifteen cases and five times in twelve cases. Eighty eight patients received an average of 3 to 3 1/2 oz. of ether and one as much as 5 oz. of ether. With the synergists the injection is never repeated. The total amount of 2 oz. is never exceeded. The reduced amount of ether necessary is explained by the synergizing of the magnesium sulphate with the ether.

EDWARD L. COR. ELL, M. D.



Gilfrich T. 1. Rupture of the vessels of the Umbilical Cord During Birth. *Beber Rupt r d*  
*N. belschnung f. e. u. l. r. f. u. t. 21 d. f.*  
*G. b. 1. h. u. Gyna 1. 1023. 1. 1. 1. 619.*

Complete rupture of the umbilical cord is frequently reported in the literature but the number of cases of isolated tearing or injury of the umbilical artery or vein is small. Most of the isolated ruptures occur during labor in the vasa previa of the velamentously inserted umbilical cord in the vasa alerrantia or in varices of the vessel walls. Injuries to the vessel walls have been observed also after deliveries in which operation was necessary.

In the literature are reported thirty-two cases of velamentous insertion of the umbilical cord in which a tear or other injury of one or more of the umbilical vessels occurred. Von Winkel observed velamentous insertion in 0.8 per cent of all births. Other obstetricians give its incidence as from 0.4 to 0.9 per cent. To suffer injury the vessels must pass close to the lower pole of the ovum. In twenty-four of the thirty-two cases reported the child was dead. Von Winkel places the infant mortality in cases of velamentous insertion at 18 per cent. The fact that eight of the children in the reported cases were born alive is attributed by Rivet and Cerharta to the activity of the labor pains which hastened delivery and to retraction of the ends of the torn vessels. In three cases (Zoeppritz, Boehme, Feitzer) the delivery was artificially ended. In the case reported by Schicke the small size of the torn vessels and the proximity of the insertion of the cord to the margin of the placenta made it possible to suture. As the head advanced the ends of the vessels became compressed as has already been described by Schlimm.

Velamentous insertion is frequently observed in twins—according to Boehme ten times more frequently than in cases of single births. In the thirty-two cases reported there were even pairs of twins. In von Franke's opinion the limitation of space in cases of twins must be looked upon as an important cause. It was possible to save the children in only two cases. In eleven cases in which one or more of the branches of the cords were injured eight children died. In seven cases in which the artery was injured six children died and in four in which an artery and vein were injured three children died. In the remaining cases the record of which are in complete seven children died.

According to Hyrtl the vessels are more apt to be injured than the arteries because they reach the placenta by a round about route. Of importance in the production of rupture is the distance of the site of the depression in the umbilical cord from the border of the placenta. According to von Winkel the average is 5 cm.

The diagnosis of laceration is very difficult because while the amniotic sac is intact the uterine os is dilated so that the examination of the vasa previa as a pro or les pul t. g. e. r. d. l. k. thickening. In only a few cases were there indications which would allow the presumption of a

velamentous insertion (Benckiser, Hueter, Hecker, Preiser). The diagnosis is generally first made when blood appears with the liquor amnii and the bleeding continues throughout the delivery.

In the differential diagnosis of laceration of the cord comes under consideration. The literature contains the reports of two cases of vessel rupture in vasa aberrantia (Essen, Moeller, Volland). Further predisposing causes are varieties of the umbilical cord. These are spindle shaped, sickle like enlargements which are evidently caused by kinking following torsion of the vessels. As a secondary result there is thinning of the walls. In the literature there are eight cases of rupture in vasa aberrantia. Some are seen in the authors' collection.

Three groups are to be distinguished:

1. Tearing of the vessel wall and hematoma in Wharton's jelly. These are lacerations caused by an increase in the arterial blood pressure of the umbilical vessels resulting from the expulsive effort and from kinking. The hematoma may vary in the size of a goose egg (Hueter, Krömer, Ritter, Diener). It may disturb the circulation of the child and thereby injure the child. However the child died in only one of the four cases reported.

2. If the hematoma is of considerable size the amniotic sheath is ruptured (Hueter, von Westphal, two cases, Delunsch). In von Winkel's cases hemorrhage did not begin until after delivery. Hemorrhage into the free cavity of the uterus constitutes the greatest danger to the child (Delunsch).

3. Tearing of the walls of the vessels and the sheath of the amnion without the production of a hematoma. To this group belong the cases of vessel in the child. In these however the vessels were mechanically injured (tearing of the cord when it was being unwound from about the neck, injury of the cord by the blades of the forceps).

Wolfenbarger reports a case of hematoma of the umbilical cord which he traced to laceration of the vessel walls due to the circulation of bile pigment in the blood. The child died of general infection of the blood.

Lacerations of the vessels are caused also by obstetric operation when there are no pathological changes in the wall (Coulais, von Kugel, Naegle and Zaborsky). In the cases reported by Coulais and von Kugel the rupture was caused in unwinding the coils of the umbilical cord. In Naegle's case a severe hemorrhage occurred when the head passed. The vessels were lacerated 5 cm from the child's umbilicus. The children were both born through. It was assumed that the tearing was caused by pulling on the cord. In Zaborsky's case the injury was caused by the forceps. Occasionally I read from my colleagues that use of marked force in the case of blood pressure a general result of the blood pressure.

In several cases the blood is not in the child. It is removed a case in which the blood is in the child's blood stream of a fatal case.

lacking. Kautsky observed a case in which a jet of blood shot from the umbilical cord after the birth of the child. As no direct cause could be found he assumed that the tension was too great for the relative shortness (38 cm). The author however accepts the explanation of Kermauner who observed a similar case. As the breaking of the amnion and the jelly occurred in the second stage of labor Kermauner assumed that as the head descended the umbilical cord was pressed against the wall of the pelvis and that in this manner the internal pressure was raised abnormally high as was indicated by the blood shooting out in a jet.

LEIXL (6)

## PUERPERIUM AND ITS COMPLICATIONS

Hobbs R. The Causes of Acute Infections of the Uterus Including Puerperal Sepsis and Septic Miscarriages and Their Treatment by Drainage. *P. Ry. Sc. U. d. Lo. d. 94*  
Sc. Ob. & Gynæ. 1

The author calls attention to the following facts in acute infections of the uterus:

1 The temperature often falls after evacuation of the bowel.

2 When the lochia are partially suppressed the temperature rises when they are reestablished the temperature falls.

3 Patients placed in a semi-Fowler position after delivery are less inclined to experience a rise in temperature than those in the recumbent position.

4 The temperature often falls after an internal uterine irrigation.

5 Foul lochia if profuse are often unaccompanied by a rise in the temperature; an increase in the pulse rate or other signs of septic absorption such as headache, flu, etc.

6 The withdrawal or escape of pus from the uterine cavity lowers the temperature.

After the stitches are removed from an adematous perineum an escape of pus often occurs and is followed by a fall in the temperature.

8 The removal of pieces of placenta or membrane from the cervical canal is followed by a fall in the temperature.

9 The retention of septic products in the uterus does not cause a rise in the temperature unless drainage is imperfect.

10 The uterus may contain a septic fetus without associated fever, but when labor pains begin and the fetus is passing through the cervical canal the temperature rises; it falls again after the uterus has expelled its contents.

11 If a septic uterus is contracted so as to shut out with a strong antiseptic symptom of septic absorption sometimes follows.

12 If uterine hemorrhage is dammed back by vaginal plugging the temperature may rise.

13 In a case of septic endometritis the temperature will often rise a degree or more just before a menstrual period and fall after menstruation has been established.

From these observations it seems reasonable to assume that a damming back or stasis is produced (1) in the uterine wall (2) in the cervical canal (3) by a loaded rectum (4) by swelling of the perineum or (5) by the position of the uterus as affected by the position of the patient. The operation of the first factor is probably precluded by the lymph flow through the uterine wall. Cervical stasis causes symptoms and signs of obstruction such as fever, an increase in the pulse rate, pain, redness and swelling of the mucous membrane and narrowing and tortuosity of the canal. The canal may contain placental blood clots, mucous or polyp. The uterus becomes tender, enlarged and boggy; it may be displaced and may contain pus. The factor of a loaded rectum is thought to operate not by absorption *per se* but by causing pressure on the cervix. That a swollen perineum may cause obstruction is evident. The value of the Fowler position in promoting drainage has been well proved.

Therefore for cases of puerperal sepsis, septic miscarriage and acute endometritis the author has adopted a uniform treatment to secure adequate drainage through the cervical canal. The patient is placed in a semi-Fowler position and if the perineum has been sutured the stitches are removed. The rectum is then emptied and any presenting pieces of membrane or tissue are removed from the canal. The uterus having been freed from residual pus by gentle washing with 5 per cent saline solution a terminal-eyed soft rubber catheter is gently introduced up to the fundus and a few drops of sterile glycerine are injected. The catheter is left *in situ* and the free end placed in the vagina.

This treatment can be repeated as often as necessary. Glycerine causes a profuse outpouring of lymph. The catheter should always be smaller than the cervical canal in order that drainage may occur along its side.

The treatment described has been given during a period of four years in several hundred cases. The results have been uniformly good, with disappearance of the subjective symptoms and of the evidence of infection. The author concludes:

5 Such treatment lessens the degree of inflammation.

2 It can be repeated many times without danger.

3 One treatment is never sufficient.

4 It should always be employed after curettage.

5 In a large number of cases pelvic pain due to inflammation is of uterine rather than tubal origin.

6 Extension of inflammation from the uterus to the adnexa is an indication for the treatment described.

7 Unless the external uterine lesions are of the grossest type no operative interference is indicated until the treatment described has been tried.

8 Exacerbations of salpingitis are less frequent following this treatment.

9 Menstrual pain ceases and the flow tends to return to normal.



# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Bowers C. A. and Trattner H. R. Repeated Venesection Blood Transfusion in Anuria. Report of a Case of Acute Nephritis with Anuria. *S. G. Nec. & Obst.* 1924 229

The authors report a case in which in addition to decapsulation of the right kidney (which did not produce any immediate beneficial effect) 500 ccm of blood were withdrawn by venesection and then immediately transfused with an equivalent amount of blood from a healthy donor. The criteria that determined the frequency of this procedure were the clinical condition, the blood chemistry and the amount of urine excreted in twenty-four hours. Four venesection transfusions were necessary.

Samples of blood taken one hour before and one hour after venesection transfusion showed a decrease of 53 mgm of urea and 1 mgm of creatinine per 100 ccm of blood immediately afterward. This lowering was temporary, however, as on days later a marked accumulation was found. Following the fourth venesection transfusion the urea and creatinine continued to diminish until almost normal figures were reached three weeks later. After each of the four treatments there was immediate and complete disappearance of all uræmic symptoms and this condition lasted for from twelve to forty-eight hours.

The excretion of urine 145 ccm in the first twenty-four hour period, five the first venesection transfusion, 100 ccm after the second, 150 ccm after the third, and 350 ccm after the fourth.

In the case under observation the highest blood creatinine content was 1.43 mgm per 100 ccm. The patient is still living seven months after the treatment but has a residual chronic nephritis.

It seems obvious according to the authors that any benefits resulting from one or two venesections would be very transitory and would be overshadowed by the increased general toxæmia which is usually present.

The following conclusions are drawn:  
1. Repeated venesection transfusion is a logical procedure in acute conditions interfering with the permeability of the kidney in that it lowers the amount of accumulated catabolic products in the blood not only by the frequent removal but also by repeated dilution of the remaining circulating blood.

2. It is a more logical procedure than a single venesection transfusion since it is inconceivable that the tissues could be detoxified for sufficient length of time to admit of much benefit.

3. It tends the patient over a critical period until the kidneys can again resume their function.

4. It can be used as an accessory measure but should not supplant renal decapsulation which is a recognized beneficial procedure in nephritis.

5. The frequency and number of venesection transfusions given in any case should depend upon the patient's general condition, the blood chemistry and the quantity of urine excreted in twenty-four hours.

6. In the case reported the venesection transfusion is probably an important factor in the recovery of the patient since there was no tension that could be relieved by decapsulation and no diuretic effect was obtained following the operation.

LORIS CROSS, M.D.

## BLADDER URETHRA AND PENIS

Graves R. C. and Davidoff L. M. Studies on the Ureter and Bladder with Especial Reference to Regurgitation of the Vesical Contents. *J. Urol.* 1914 93

In a previous report the authors established the fact that regurgitation of the bladder contents in the ureters may occur under certain conditions. This article reports further work on the subject which again demonstrates that a factor is essential for reflux in the ureters is sustained active tonus of the bladder muscle. Consequently agents which increase the bladder tone may produce regurgitation.

It was found that ordinary chemical agents such as boric acid, potassium permanganate and argyrol in the strengths in which they are commonly used in the bladder are neutral in relation to vesical tone and reflux, while mercuriochrome 2.0 and silver nitrate especially in the more concentrated solution are irritating and stimulate contractions.

Changes in the hydrogen ion concentration and hypotonic solutions are without effect, while hypertonic solutions such as 25 per cent sodium bromide depress the vesical tone and injure the tissues. When they are introduced into the bladder rapidly innocuous solutions such as salt solution at body temperature temporarily produce a higher pressure than when they are introduced slowly, but slow filling is associated with greater regurgitation.

H. L. S. FORD, M.D.

O'Connor J. J. Primary Carcinoma of the Female Urethra. Report of a Case Treated by Diathermy. *J. Urol.* 1924 21 159

Only ninety-nine apparently authentic cases of primary carcinoma of the female urethra have been reported. In his review of the literature the author rejected about fifty cases because the lesion appeared to belong to the group of vulvovaginal tumors.

Primary carcinoma of the female urethra develops most frequently in the mucosa of the urethra.



# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Ely L W Bone Growth In Transplanted Bone  
An Experimental Study *Arch Surg* 94:1

When a piece of bone is removed from an animal by an aseptic operation and is immediately buried in the tissues of the animal new bone formation occurs in it. All authorities agree on this point. Whether the transplanted bone dies and simply by its presence stimulates the surrounding tissue to form new bone or whether it survives and itself forms new bone is still to be determined.

Two main difficulties in deciding this point are that it is not always possible to distinguish dead bone from living bone, and that we are uncertain of our identification of the osteoblast as well as of its source.

The author reports a number of experiments on rats in which a piece of the lateral condyle of the femur was placed in the thigh muscles. After various periods of time the bone was removed, fixed, stained and examined. In every case, the bone and its contained marrow had died. The author is convinced that bone formation in such cases takes place through vascularization.

ROBERT V. FOSTER, M.D.

Ito L K The Nutrition of Articular Cartilage  
and Its Method of Repair *Bull J Surg* 924

In a series of experiments on rats and rabbits, Ito removed a portion of the entire articular cartilage and left it loose in the joint cavity. For comparison in some cases a piece of bone was taken from the tail of the same animal and substituted for the detached cartilage. It was found that in practically every instance the loose body gained a definite attachment to the synovial membrane. The author believes that in the one case in which it was found wandering free in the joint cavity but had retained its activity it was nourished by synovial fluid which it previously had a synovial attachment or not.

Throughout the experiments the loose bodies retained vitality and many of them proliferated. The bone cells, however, became inactive and died. After four weeks newly formed bone tissue appeared around the dead bone in the loose bodies.

The repair took place first by filling of the defect with fibrous tissue which later became fibrocartilaginous. The length of this process, as between ten and twelve weeks. In some specimens it appeared that the repair tissue came from the cancellous portion and in others from the synovial membrane.

R. R. V. FOSTER, M.D.

Piemister D B Changes in the Articular Surfaces in Tuberculous and in Pyogenic Infections of Joints *Am J Roentgenol* 19:4:1

In mild cases of acute pyogenic arthritis the articular cartilage may not be involved but in the more severe case there is an early extensive destruction of the cartilage at the points of contact and pressure of opposing articular surfaces. Destruction due partly to the erosive action of opposing articular surfaces upon each other and partly to the digestive action of proteolytic ferments in the exudate occurs wherever cartilage is dead. The bone adjacent to the articular surface is usually destroyed only when infection is primary in the bone and results in necrosis and sequestration. Diseased cartilage heals by granulation tissue which eventually formed in to fibrocartilage favoring a fibrous ankylosis. When the entire thickness of cartilage is destroyed bony ankylosis results eventually.

The inflammatory process in tuberculous arthritis originates in the bone or synovial lining. The articular cartilage is involved secondarily by the action of tuberculous granulations growing in direct contact with it. The cartilage is attacked along its free surface and about its margin wherever it is unsupported by its articular cartilage. This portion is involved in the later stage of the disease when the granulations are found along the free surfaces of the joint and in the author's opinion tend to absorb and separate the necrotic portion of the joint without the aid of tubercle bacilli. Destruction of cartilage is always bilateral and island of detached cartilage may remain free in the joint for months. After extensive destruction of the joints the process may invade the adjacent ends of the bones producing more or less extensive areas of necrosis. When the occluding surfaces of a joint are involved, kissing sequestra are formed. The author has seen seven cases of this phenomenon. Occasionally bony proliferation may be found along the periosteal surfaces of an infected joint. After ankylosis of a joint healing occurs. The ankylosis is may be fibrous or bony depending upon the extent of the destruction of the joint cartilage.

In pyogenic arthritis the roentgenogram shows first a slight haziness and distortion of the shadows. Absorption then occurs along the joint surfaces with regional atrophy. Narrowing of the joint space in direct absorption of cartilage. When bone is absorbed in addition the space is obliterated. In the more severe cases the sequestrum occurs rapidly. Bony ankylosis is demonstrated by bone trabeculae bridging the joint space. Fibrous ankylosis shows a narrowed and uneven cartilage space often with marginal lipps.

The first X-ray evidence of tuberculous arthritis is reduced density of the bony shadow after a few



With regard to the lumbosacral articulation the author states that normally there is an angle of 45 degrees between the fifth lumbar and the first sacral segments and that the normal angle of articulation between the inferior articular processes of the fifth lumbar and superior articular processes of the first sacral is such that there cannot be any relaxation in these joints. However any variation in the angle either unilateral or bilateral renders the lumbosacral joint susceptible to rotation or spondylolisthesis. Magnan therefore urges careful examination of roentgenograms of the lumbosacral articulations with special attention to the angle formed by the fifth lumbar segment and the sacrum.

Willis has shown that there are seven general types of defects of the fifth lumbar vertebra and occasionally of the first and second sacral vertebrae. Incomplete closure of the neural arch which is found in a large number of cases is characterized by a marked reduction of the bony attachments in this region which favors overstraining of the remaining ligaments. Incomplete separation of the lamina at its base from the body of either or both side and incomplete closure and complete separation of the articular processes of the fifth lumbar from the body are other anomalous conditions which render the joint susceptible to weakness and pain. Unless the roentgenogram is taken at an angle that will demonstrate the apertures the defects are entirely overlooked or may be regarded as fractures. Such anatomical defects should be looked for in every case and method should be devised for their detection.

In examinations of a number of lumbosacral articulations such a wide variation in the lateral process is found that it is impossible to determine which type is normal. Back pain may be attributed to a sacralized lateral process only when the process impinges upon the ilium and this articulation becomes inflamed or traumatized. In five cases portions of the fifth lateral process were removed because it was thick and wide and impinged upon the lumbosacral cord. Complete recovery resulted in every case.

Magnuson attributes sciatic pain to a traumatic inflammation of the ligaments at the time of injury which results in swelling transmitted from the lumbosacral and sacro-iliac ligaments to the nerves which run through them and is immediately over them to the upper part of the sacro-iliac joint. His conclusions are based upon the examination of more than 2000 cases of sciatic pain following back strain.

Injury. This pain disappears only when treatment is directed to the inflammation of the ligaments of the lumbosacral and sacro-iliac joints.

RUDOLPH S. REICH, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Henry A. K. Exposure of the Humerus and Femoral Shaft *B. J. S. 1941*

The author goes thoroughly into the anatomy of the arm and thigh in his description of the complete

exposure of these regions for extensive operations such as bone grafting and resection. The skin incision to expose the shaft of the humerus follows the cephalic vein from the coracoid tip to the bend of the elbow and is continued into the forearm in the midline of its upper third. The humerus is reached by dehiscing the outer border of the biceps dividing the deep fascia and cutting down upon the bone along the deltoid border and then dividing the exposed outer fourth of the brachialis muscle. The chiasm filament to the brachialis is thus avoided and the muscle fibers are split longitudinally. The musculospiral may be located one fingerbreadth distal to the deltoid insertion.

An incision may be carried through the brachialis to within two fingerbreadths of the level of the epicondyles without entering the elbow joint.

The shoulder joint may be reached by dividing the fascia and periosteum on the upper surface of the outer third of the clavicle. The bone edge is detached with a chisel where the deltoid arises. The deltoid may then be hinged outward. The elbow is reached through the brachialis.

The line of incision for exposing the femur is from the antero superior spine to the outer angle of the patella. The interval between the rectus femoris and vastus intermedius located and these muscles are separated with the fingers. Thus the cruræ and on its surface the external circumflex vessels are exposed. These are mobilized and retracted. An incision through the upper portion of the cruræ often divides a large vein. When the cruræ is separated from the bone and drawn apart more than a foot of the femoral shaft—from the lower epiphysis to the lesser trochanter—is exposed.

ROBERT V. FRANKEN, M.D.

## Sullivan R. F. Spine Fusion in the Treatment of Vertebral Tuberculosis *B. J. S. 1941*

Statistics from two eastern hospitals show that cases of vertebral tuberculosis constitute from 39 to 48 per cent of all cases of joint tuberculosis and about 33 per cent of all cases of bone tuberculosis.

The disadvantages of the non-operative or recumbent treatment that was used exclusively previous to the work of Hibbs and Albee in 1911 were that from one to three years were necessary to bring about the fusion it was difficult to maintain constant recumbency the patient suffered from mental depression and it was impossible to determine when (if ever) the disease was cured.

The two operative measures considered by Sullivan are the spinal fusion of Hibbs and the tibial bone graft of Albee. The former is preferable for the following reasons:

- 1 It requires only one incision.
- 2 It does not necessitate the use of special electrical equipment.
- 3 It obtains fusion of the vertebrae at five points whereas Albee's method fuses at only one point.





The newly modeled articular surfaces are covered with a free transplant of fascia lata with the outer surface placed against the bone. The smooth inner surface then serves as the synovial membrane. It should be 8 or 10 in long and 4 or 5 in wide. It is anchored to the anterior surface of the femur about 4 in up curved downward and backward under the new condyle anchored to the posterior capsular wall and then brought on forward to cover the end of the tibia.

The joint is closed completely, fascia being transplanted to bridge defects in the capsule if necessary. The quadriceps tendon is lengthened about 2 in. In closure the joint is kept at an angle of 10 degrees to insure flexion.

If the ankylosis is in flexion the quadriceps need not be cut as it is redundant and can be retracted to the inner side.

For ankylosis of the patella alone a broad fold from the vastus externus is carried though between the patella and femur after slicing off of the under surface of the patella and the fold is stitched to the vastus internus with the deep surface next to the patella.

If the patella is freely movable the U-shaped union is reversed and carried across the patella tendon which is lengthened by a Z-shaped incision.

The amount of bone removed depends on the position of the knee. From 1 to 1 1/2 in must be sacrificed as a rule. Shortening is a disadvantage unless it is more than 2 in in which case a stiff joint in an improved position is admissible. Instability need not be feared if care is taken not to remove too much bone from the tibia. Infection will occur in a high percentage of the cases on account of the extent of the raw surface but treatment with Dakin's solution will control it and an excellent result may be secured.

After operation the leg is placed in a Thomas splint with a joint at the knee and a half hoop anterior over the joint. A rope is fastened to the hoop and carried to overhead pulley and up to where the patient can reach it to pull and bend the knee passively. The leg is kept straight with moderate extension until the local reaction has subsided usually from eight to ten days. Active motion begun at the end of this time the patient is doing himself by means of the rope.

At the end of six weeks the splint is removed and walking with crutches is begun weight bearing being increased gradually. In existent cast motion under gas anesthesia may be necessary but not more than 10 degrees of flexion should be attempted at one time.

The period of total disability is from two to three months and that of partial disability six months.

This article is based on forty operations. Twelve are reported here the others are described in previous papers. From the result the author concludes that in selected cases arthroplasty of the knee offers an excellent chance of obtaining satisfactory motion.

WILLIAM A. CLARK, M.D.

## FRACTURES AND DISLOCATIONS

### Hale K. The Treatment of Fracture of the Olecranon Process by the May Hook Tractor

*Of St. U. J. 94: 434*

An instrument shaped like a fish hook 4 or 5 in in length as described by the author to pull down the detached olecranon in the case of a patient who refused open operation. The sharp end of the hook was tapped lightly into the proximal end of the olecranon through a small skin incision.

By traction on the hook with the arm extended the fragment was pulled into proper apposition to the shaft. A short wooden splint was then strapped to the forearm with adhesive and the distal end of the hook anchored to this splint with a rubber tube to maintain the traction. The hook was held in position by a bandage and the arm carried in a sling.

Good union with perfect function was obtained.  
WILLIAM A. CLARK, M.D.

### Speck K. Traumatic Lesions of the Head of the Radius. Relation to Elbow-Joint Dysfunction

*S. G. Cl. V. 1m. 94: 651*

Uncomplicated fracture of the head of the radius occur in adults though the head and neck mainly in children. The lower limit of all these fractures is the bicipital tuberosity below which is the true radial diaphysis. The radial head articulates only with the ulna to which it is held by the annular ligament. In motions of pronation and supination occur at this joint. The upper surface of the radial head is smooth covered with synovia and continuous with the elbow joint proper so that lesions of the head may impede not only pronation and supination but also flexion and extension of the forearm.

Usually when injured the head of the radius is compressed as a whole and so deformed that smooth rotatory motion against the ulna is mechanically impossible. If the fracture is comminuted a bone fragment may enter the joint proper. Hemarthrosis occurs absorption is slow new bone may proliferate capsular changes appear and any one of the three main nerves at the elbow may be involved. If improper treatment is given great disability follows. Soon after the injury there may be two thirds of normal flexion and extension may be possible but pronation and supination are painful and there is a point of extreme tenderness over the head. If the fracture is complete crepitus may be felt but the lesions usually partial or marginal. It is this type of lesion which is most frequently overlooked. Early rest and immobilization may result in nearly full return of function if the head is not dislocated sufficiently to interfere with rotation.

The head is often involved in neck fractures which is an omote or of the greenstick type tend to heal rapidly with minimal dysfunction supination being chiefly affected. If the fracture is complete and without displacement union usually



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Locke C. E. Jr. Intracranial Arteriovenous Aneurism or Pulsating Exophthalmos. *J. C. 1944* 14: 144-147

In the literature 585 cases of intracranial arteriovenous aneurism have been reported. To date the results of treatment have been unsatisfactory. The condition was first described by Travers in 1809. The author reviews its history.

Of the entire series of 585 cases reported found in the literature in only 544 cases is the etiology given.

In 112 cases the aneurism is of spontaneous origin and in 473 of traumatic origin. The pontianous type of aneurism occurred more frequently in females (74.13 per cent) than in males and the traumatic type more frequently in males (66 per cent) than in females.

The average age of the persons with pontianous aneurism was near the end of the fifth decade while that of the subjects of traumatic aneurism was near the end of the third decade. Bilateral exophthalmos is found more frequently in cases of traumatic aneurism than in cases of spontaneous aneurism.

A total of fifty postmortem examinations have been recorded. Of this number thirty three were performed upon cases of pontianous aneurism and seventeen upon cases of the traumatic type. On the basis of the present information at hand it may be stated that practically all cases of the traumatic type of pulsating exophthalmos are due to an intracranial arteriovenous communication while of the cases of the spontaneous type only a few more than half can be attributed to this cause. One fourth being due to tumor and the remaining fourth to simple aneurism of either the internal carotid or the ophthalmic artery.

Rawlings has found that 30 per cent of the fractures of the base of the skull involve the body of the sphenoid bone. Both the internal and external carotid and the cavernous sinus are comparatively removable in this region and undraining lacerations may rupture or injure their adjacent wall. The cases of actual rupture are those in which the patient has the bruit immediately upon the return of consciousness. When the bruit is not heard until several days or weeks after the accident the vessel walls were only damaged at first and rupture did not occur. In some cases a partial rupture may come in only intracranially with both the internal carotid artery and the cavernous sinus and may rupture or weaken the adjoining walls of these two vessels.

The mechanism of production of a pulsating exophthalmos spontaneously without an injury is

more difficult to explain. The condition may be due to a localized and weakened condition of the wall of the adjoining vessel. Again it seems probable that an arteriovenous communication may occur from the rupture of a simple aneurism in the portion of the internal carotid which is within the cavernous sinus or in its immediate neighborhood. The spontaneous type of pulsating exophthalmos may of course be due also to a simple aneurism of the internal carotid or ophthalmic artery or even a tumor of the orbit. The various cranial nerves may be involved.

The author reports twelve cases of pulsating exophthalmos following trauma. In one case marked improvement in the ligation of the internal carotid through the temporalis major of the vessel is given. In the other eleven cases in addition to ligation of the internal carotid ligation of the superior ophthalmic vein was done with a very satisfactory outcome. In the third case which followed trauma a cure was obtained. The treatment consisted of rest, morphine and digital compression.

The author tabulates the results of treatment as follows:

Cases treated by ligation of the common carotid: 124 reported, cured 154, mortality 8.9 per cent. Cases treated by ligation of the internal carotid: thirty-eight reported, cured eight, mortality 9 per cent. Cases treated by bilateral ligation of the carotids: one reported, cured thirteen, mortality 11.8 per cent. Cases treated by digital compression: six reported, cured twenty, no mortality. Cases treated by ligation of the orbital veins: ten reported, cured eight, mortality 5.26 per cent. Cases treated by ligation of the carotid and orbital veins: twenty-four reported, cured nine, mortality 16.67 per cent. Cases treated by rest and medication: twenty-eight reported, cured four, mortality 1.57 per cent. The cases treated by glaucoma injection were sixteen reported, cured five, no deaths recorded.

STAKEY J. SFEGER, M.D.

Gordon A. H. and Bourne C. R. Suppurative Phlephlebitis with Pseudomonas Septicæmia. *Br. J. Clin. Path.* 9: 1, 1913

The authors report the case of a girl of 9 years who gave a history of measles of pneumonia at 3 and again at 5 followed by pleurisy, the effusion of whooping cough at 7 and of inguinal adenitis which she charged for a long time on two occasions. The patient was never well and suffered from repeated colds and bronchitis.

Six months before her final illness she had a sharp attack of pain in the lower abdomen which lasted for a few hours but was not accompanied by vomiting or fever. After that she was in remarkably good

occurs in from fifteen to twenty days with good joint motion. If there is displacement limitation of motion and possibly cubitus valgus may result.

Fractures of the diaphysis of the ulna complicated by dislocation of the head of the radius are seen in adolescents. This complication may be present in as high as 80 per cent of the fractures of the upper part of the ulna and is often overlooked until interference with joint motion becomes apparent. In such cases the prognosis for complete function is good only if early reduction of the head is done.

Subluxation of the head of the radius or pulled elbow occurs in infants learning to walk. It is caused by jerks on the hyperextended arm resulting in forward displacement of the head. It can be reduced by pressure on the head. Reduction should be followed by splinting of the arm in acute flexion. If the luxation is not reduced the carrying angle remains permanently changed although all joint movements may be normal.

In the cases of adults the treatment of these injuries of the radius is resection of the head in all cases except fissure fractures without displacement. Only resection promises the return of the power of pronation and supination. If exostoses are formed or there is pain restriction of motion or some other complication it may be done years after the injury. In the cases of infants and children resection is usually contra-indicated because of the danger of growth disturbance following epiphyseal injury or removal. If it is necessary because of ankylosis or considerable bone formation a modified arthroplasty by means of transplanted fascia should be done.

CHESTER C. GUY, M.D.

Martin E. D. Fracture of the Neck of the Femur  
*S. Ark. M. J.* 1944, vi, 613

Union of a fracture of the neck of the femur will occur if the patient's condition permits osteogenesis and if apposition and immobilization of the fragments are obtained. The purpose of the author's method is to accomplish this result with the least discomfort to the patient, i.e. without the use of a body cast. The technique described is briefly as follows:

An incision about 6 in. long is made over the greater trochanter and the tissues are dissected away so that the head and neck can be located. While an assistant makes traction on the leg with the foot inverted, the direction of the head from the trochanter is gauged, a hole is drilled through the femur to the fracture line, and a screw is inserted into the head. By tightening the screw the head and trochanter are brought into apposition. An X-ray examination is then made and if the screw is not in the correct position it is removed and reinserted. If the first screw is correctly placed a second is inserted above or below and parallel to it under control of the X-ray. The second screw insures immobilization of the head on the shaft. After the placing of the screws the limb is suspended on a Hodgen splint for from ten days to two weeks or until the wound has healed. The patient is then kept in bed several weeks longer with no appuance on the leg.

In twelve cases treated in this manner the results exceeded expectations. A most encouraging feature was the relief due to the early mobilization of the joints of the leg.

CHESTER C. GUY, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

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Of the entire series of 588 case reports found in the literature in only 544 cases is the etiology given.

In 172 cases the aneurism was of spontaneous origin and in 478 of traumatic origin. The spontaneous type of aneurism occurred more frequently in females (74.73 per cent) than in males and the traumatic type more frequently in males (76.76 per cent) than in females.

The average age of the person with spontaneous aneurism was near the end of the fifth decade while that of the subjects of traumatic aneurism was near the end of the third decade. A bilateral exophthalmos is found more frequently in cases of traumatic aneurism than in cases of spontaneous aneurism.

A total of fifty postmortem examinations have been recorded. Of this number thirty-three were performed upon cases of spontaneous aneurism and seventeen upon cases of the traumatic type. On the basis of the scant information at hand it may be stated that practically all cases of the traumatic type of pulsating exophthalmos are due to an intracranial arteriovenous communication while of the spontaneous type only a few more than half can be attributed to the cause one-fourth being due to tumor and the remaining fourth to a simple aneurism of either the internal carotid or the ophthalmic artery.

Rawlings has found that 60 per cent of the fractures of the base of the skull involve the body of the sphenoid bone. As both the internal carotid artery and the cavernous sinus are comparatively immovable in this position an underlying fracture may rupture or injure their adjacent walls. The cases of actual rupture are those in which the patient hears the bruit immediately upon the return of consciousness. When the bruit is not heard until several days or weeks after the accident the vessel wall was only damaged at first and ruptured later. In some cases a penetrating wound may come in contact intracranially with both the internal carotid artery and the cavernous sinus and may rupture or weaken the adjoining walls of these two vessels.

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more difficult to explain. The condition may be due to a diseased and weakened condition of the walls of the adjoining vessel. Again it seems probable that an arteriovenous communication may occur from the rupture of a simple aneurism in the portion of the internal carotid which is within the cavernous sinus or in its immediate neighborhood. The spontaneous type of pulsating exophthalmos may of course be due also to a simple aneurism of the internal carotid or ophthalmic artery, or even a tumor of the orbit. The various cranial nerves may be involved.

The author reports two cases of pulsating exophthalmos following trauma. In one case marked improvement followed ligation of the internal carotid though digital compression of the vessel gave no relief. In the second case in addition to ligation of the internal carotid ligation of the superior ophthalmic vein was done with a very satisfactory outcome. In the third case which followed trauma a cure was obtained. The treatment consisted of rest, morphine and digital compression.

The author tabulates the results of treatment as follows:

Cases treated by ligation of the common carotid 34 reported cured 154 mortality 8.9 per cent. Cases treated by ligation of the internal carotid thirty-eight reported cured eight mortality 7.9 per cent. Cases treated by bilateral ligation of the carotids twenty-one reported cured thirteen mortality 14.28 per cent. Cases treated by digital compression 100 reported cured twenty no mortality. Cases treated by ligation of the orbital veins alone nineteen reported cured eight mortality 5.6 per cent. Cases treated by ligation of the carotid and orbital veins twenty-four reported cured nine mortality 76.67 per cent. Cases treated by rest and medication twenty-eight reported cured four mortality 3.57 per cent. The cases treated by gelatine injection were sixteen reported cured five no deaths recorded.

SPECIAL J SEEGER M D

Gordon A H and Bourne C R Suppurative  
Pharyngitis with Pneumococcus Septicæmia  
*M d Cl* 1 Am 9 4 9 3

The authors report the case of a girl of 9 years who gave a history of measles of pneumonia at 3 and again at 5 followed by pleurisy with effusion of whooping cough at 7 and of inguinal adenitis which discharged for a long time on two occasions. The patient was never well and suffered from repeated colds and bronchitis.

Six months before her final illness she had a sharp attack of pain in the lower abdomen which lasted for a few hours but was not accompanied by vomiting or fever. After that she was in remarkably good

health for some time. Her last illness began suddenly with chills, paroxysmal abdominal pain, an irregular high temperature, a rapid pulse rate, marked nausea and vomiting, variable tenderness and resistance often in the upper right quadrant of the abdomen, marked prostration and emaciation and leucocytosis. A blood culture was positive for pneumococcus Type 2. The diagnosis was pneumococcus septicæmia.

On rectal examination a small firm mass was felt at the tip of the examining finger to the right. Abdominal exploration revealed no evidence of tuberculo-sis or peritonitis. At a point where the omentum was adherent to the cæcum was an area the size of a 50 cent piece which was thickened and oedematous. The appendix showed some chronic inflammation. On the mesentery of the cæcum several large soft glands were found.

A few days after the operation the wound broke down, discharging a foul smelling greenish yellow pus. Later a discharging right otti me ha developed which showed Gram positive cocci in groups and lanceolate Gram positive diplococci. Death occurred six weeks after the onset of the condition.

Among other findings at autopsy were pus in the pouch of Douglas and in pockets at the end points of the superior mesenteric artery, many oozing blood clots as large as a finger tip in the lower lobe of the left lung, a few small areas of suppuration in the upper lobe of the right lung, an ulcer 4 by 2 in in the cæcum and in the liver many irregular bluish green mottled areas ranging in size from that of a pea to that of a hen's egg. On section of the liver a greenish pus exuded. The portal vein was filled with a purulent clay colored substance and the superior mesenteric vein and its branches showed thrombosis and ulceration throughout its length.

The heart's blood gave a pure culture of pneumococcus Type II. The ulcer of the cæcum and the abscesses of the liver and mesentery showed pneumococcus and bacillus coli. The spleen showed pneumococci.

The presumable course of events in this case was infection of the radicles of the portal vein from the ulcer of the cæcum with upward extension of the infection and resultant thrombosis until the main trunk of the vein was reached. In addition there was retrograde extension along other branches of the portal vein. On reaching the liver the thrombosis invaded the lobular veins and multiple abscesses were formed.

The author reviews the literature on pylophlebitis with septicæmia. The condition is practically always fatal. CLAYTON F. A. D. M.D.

### BLOOD TRANSFUSION

Higgin, S. G. and Fletcher, D. Effects of the Intramuscular Injection of Sodium Citrate upon Bleeding. *J. Surg.* 9: 41, 1933.

In 1916 Neuhof reported the following conclusions:

1. The coagulation time of the blood is greatly shortened within a few minutes after the introduction of non-toxic doses of sodium citrate.

2. The bleeding time is also shortened.

3. Coincident with the shortened coagulation time the color of the venous blood is altered to a light arterial tint.

4. There is no fatal toxic or lethal dose of sodium citrate per kilo of body weight; the toxicity depending to a remarkable degree upon the rate at which the sodium citrate solution is introduced.

5. A toxic or lethal dose is characterized by a swing from the state of shortened coagulation to a state of suspended coagulation. This latter phenomenon led to the sodium citrate method of blood transfusion and it was this effect which overshadowed the ordinary pharmacological action of sodium citrate.

Weil in 1915 reported that he was able to shorten the coagulation time by one half by administering 5 gm. of a 20 per cent solution.

Neuhof and Hirschfeld reported a series of 500 cases in which sodium citrate was administered. In the last 200 it was given by the intramuscular route. They concluded that such administration results in prompt and pronounced shortening of the coagulation time, bleeding time of 10 or three hours duration followed by gradual return to the normal within from twenty-four to forty-eight hours. They established the optimum dose as 30 c.c.m. of a 30 per cent solution.

The authors report a series of fifty cases. With a 3 in. needle 3 c.c.m. of a 1 per cent novocaine solution are injected into each buttock. Three minutes later 15 c.c.m. of a 30 per cent chemically pure sodium citrate solution sterilized by boiling are injected into each buttock in the same area.

In the first twenty-five cases the coagulation time before citrate injection ranged from five to eleven minutes. After the injection the shortest time ranged from one to two and one-half minutes and was noted from forty-five to sixty after the injection. After sixty minutes it gradually returned to normal within from twenty-four to forty-eight hours.

CARL D. NEUHOF, M.D.

Robert on, S. B. Exsanguination Tranfusion. A New Therapeutic Measure in the Treatment of Severe Toxæmia. *J. Ch. Surg.* 19: 41.

The technique of the operation described as follows:

By puncture of the median basilic vein of the donor or donor's blood is withdrawn into 100-c.c.m. glass syringes each of which contains 10 c.c.m. of freshly prepared 3.5 per cent sodium citrate solution. When each syringe is filled it is inverted several times to insure the proper mixing of its contents and is then emptied into a basin. A quantity equal at least to the total circulation of the patient is thus obtained. In estimating the amount required this has been the custom to consider that the quantity of blood in the circulation is roughly 35 c.c.m. per

pound of body weight. The desired amount having been withdrawn from the donor it is laid aside until required at a later stage of the operation its temperature being maintained during this time by a water bath at a temperature of 100 degrees F.

The recipient is then prepared. The cannula for the transfusion is first tied into a suitable vein such as the internal saphenous at the ankle or the median basilic at the elbow and salt solution is slowly introduced to prevent clotting. The exsanguination cannula is then inserted. In small infants the superior longitudinal sinus is used for the exsanguination but in children in whom the anterior fontanelle is closed the femoral vein provides a suitable substitute. The superficial veins are not satisfactory as they cannot be relied upon to yield a rapid and continuous flow of blood. When the femoral vein is used a large cannula is introduced into it through the saphenous vein which can readily be picked up just before it perforates the cribriform fascia. By introducing the cannula in this way the continuity of the femoral vein is not disturbed and the risk of injuring the circulation of the limb is avoided.

Blood is then withdrawn from the patient until signs of exsanguination begin. The amount of blood withdrawn at this stage varies greatly. In the cases of small children the author has found the quantity to range from 60 to 160 c.c.m. With the first sign of weakening of the pulse one of the 100 c.c.m. syringes containing citrated blood from the donors is connected with the transfusion cannula and the introduction of fresh blood is begun. If it appears that the withdrawal of blood has approached too close to the margin of safety from 5 to 10 minims (0.3 to 0.6 c.c.m.) of a 1:1,000 epinephrin solution are administered by means of a hypodermic needle thrust into the rubber tubing which connects the transfusion syringe with the cannula in the vein. After the transfusion has begun the withdrawal and the introduction of blood are carried on simultane-

ously at approximately the same rate until all of the available blood has been transfused. As a rule more blood is introduced than was removed the excess usually being from 100 to 150 c.c.m. but if prior to operation there were cyanosis and other signs of failing circulation it has been the author's practice to withdraw slightly more blood than the total amount injected.

The operation of exsanguination transfusion has been performed mainly in the treatment of the following conditions: (1) the toxæmia of severe burns (2) erysipelas (3) acute intestinal intoxication (4) reorcin poisoning (5) malignant scarlet fever and (6) epticæmia.

The points brought out in the article are summarized as follows:

1 In cases of severe superficial burns in which the symptoms indicate a probably fatal result exsanguination transfusion has reduced the mortality from 100 to 50 per cent. Before the introduction of this procedure the author had not seen cases of burn toxæmia recover after the development of convulsions.

2 In erysipelas of the newborn the mortality has been reduced from nearly 100 to 50 per cent and in the cases of patients from 1 month to 12 months of age it has been reduced from 50 to 13 per cent.

3 In acute septic scarlet fever the method seems to be of decided value in tidning the patient over the period of intense toxæmia as well as in converting the case into one of the ordinarily severe type.

4 In acute intestinal intoxication the adoption of exsanguination transfusion has reduced the mortality by 20 to 25 per cent. This includes all cases admitted in an apparently moribund condition.

5 In epticæmia the results are on the whole somewhat disappointing. Although in some the response to treatment was most decided in others the benefit seemed to be slight and only temporary.

MORRIS H. KAHN, M.D.



# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Hamilton T G Conservation in the Treatment of Hand Injuries *Clinical Medicine* 1924  
686

Conservation in the treatment of hand injuries aims toward restoring the patient to activity with the least loss of his use function and time and with the least economic loss. The treatment should be begun early in order that devitalization of tissue and infection may be minimal and the case should be studied from the beginning from the point of view of the methods which will best conserve the functions necessary to the patient's occupation. Hamilton cites four illustrative cases. His conclusions are summarized as follows:

1. No tissue should be sacrificed unless it is necrotic or wholly detached from all blood supply.
2. Sterilization is important and should be as thorough as possible without destroying the vitality of the tissues.
3. Sutures should be so placed that they will not cause any unnecessary devitalization. If necessary they may be omitted entirely.
4. Drainage should be provided in practically all cases.
5. Efficient splinting, the prevention of bandage pressure and elevation of the hand increase comfort and assist healing.
6. Physiotherapy should be begun early and continued as long as function can be benefited by it.
7. If ankylosis is unavoidable the position of greatest utility should be adopted.

L M ZWISLOCKY MD

McWilliams C A Principles of the Four Types of Skin Grafting with an Improved Method of Treating Total Avulsion of the Scalp *J Am Med Ass* 1944 129 185

The four types of skin grafts are: (1) Thiersch grafts (Ollier an independent coverer); (2) Reverdin's minute plugs of full thickness skin; (3) free full thickness non-pedicled grafts; and (4) pedicled flaps (not true grafts).

Thiersch grafts nearly always take when applied to fresh sterile operative wounds such as the wound of breast amputation. For sterilization of the granulating surface the author employs Dakin's solution. One of the most typical uses of the Thiersch graft is the treatment of total avulsion of the scalp.

McWilliams seldom employs Reverdin grafts. For success in the grafting of free full thickness non-pedicled grafts the author gives fourteen rules. The use of the pedicled flap of skin with a considerable layer of attached fat is one of the most

dependable methods for the repair of the scalp. The author describes three general methods of using pedicled flaps and gives thirteen rules for the successful formation of single pedicled skin flaps. The article is summarized as follows:

1. The most efficient method of treating total avulsion of the scalp consists in immediate surgical cleansing of the raw area, shaving and surgical cleansing of the avulsed scalp and drilling of the bare bone into the diploe at numerous points followed immediately by covering of the entire raw area with Thiersch grafts taken from the avulsed scalp. The totally avulsed scalp should never be replaced as it will not live.

2. Of all types of skin grafting autogenous Thiersch grafts are the most successful and have the widest applicability. Their disadvantage is their subsequent contraction. Isografts are usually unsuccessful.

3. Autogenous free full thickness non-pedicled flaps are somewhat less successful but still worth a trial provided care is taken in selecting the case and the flap technique is used. Fresh operative wounds with a muscle base are most favorable. A fat base is most unfavorable. Contraction of the graft is slight but a disadvantage is the subsequent pigmentation. All subcutaneous fat should be carefully trimmed from the graft with scissors. The transplanted flap is punctured at numerous points with Carrel's punch and very firm even pressure (most important) should be applied to the entire surface of the graft by the dressing.

4. Pedicled flaps are uniformly successful if there is no necrosis of the end of the flap. At a preliminary operation the flap may be elevated and freed and then sewed back in place to determine the chances of necrosis before it is transplanted into its final position. These flaps should retain the subcutaneous fat upon them.

5. Eyebrows may be grafted most successfully by taking half the opposite eyebrow and transplanting it with a pedicle. Slightly less successful are free full thickness flaps taken from the hair scalp.

6. It is very important to observe that in contradistinction to free full thickness grafts, with which the firmest subsequent pressure is essential, the pressure on pedicled flaps should be only moderate as otherwise necrosis will result from the obstruction to the blood supply by pressure on the pedicle of the flap.

7. The subsequent contraction that takes place in Thiersch and Reverdin grafts must be taken into account. Because of this contraction on such grafts should not be used to cover raw areas in the neck, axilla, cubital fossa, the elbow, or popliteal space. In

these localities free full thickness skin grafts or pedicled flaps should be employed.

8 It should be noted also that free full thickness grafts should have no subcutaneous fat on them since their blood supply is obtained from the raw base and fat is a poor conductor of the circulation but in pedicled flaps the subcutaneous fat should remain since their circulation is maintained through the pedicle and the fat forms a good cushion on which the skin can move freely.

9 The only way to cure an old roentgen ray burn is to excise the raw area widely, sterilize it and then cover it with a Thiess graft. Full thickness grafts whether pedicled or not do not take because the surrounding endarteritis causes a deficiency in their blood supply.

10 Free full thickness grafts should not be cut larger than the area to be filled. Therefore some stretching will be necessary when they are transplanted. This is in contradistinction to pedicled flaps which should lie easily and should not be stretched. Pedicled flaps must be cut one third larger than the area to be filled to allow for shrinkage.

11 Surgical textbooks are too indefinite regarding the results of iso-skin grafts and the replacement of the totally avulsed scalp. The futility of each of these procedures cannot be too strongly emphasized. Only the partially avulsed scalp with a pedicle should be replaced.

12 The transplantation of section of monkey or other animal glands (i.e. testes) is entirely without scientific basis and has been exploited for commercial purposes only. This procedure is no less certain to fail than the transplantation of iso-skin grafts. Both methods should be unhesitatingly condemned by conscientious surgeons.

FRED C. ROBERTS, M.D.

Sistrunk W. E. The Reduction of Surgical Mortality. *N. O. J. M. & S. J.* 9:41, 1963.

Surgery of the present day has slowly evolved from the painstaking studies of many generations of surgeons. Surgery as practiced today may be regarded as an art developed since the introduction of anesthesia and asepsis. The study of pathology in living tissue has made possible deductions of great value in the treatment of surgical diseases. The discoveries of medicine, the increase in laboratory facilities and the development of training schools for nurses have all helped to advance the art.

It is gradually being realized that operations may be more safely performed in many instances by preliminary preparation of the patients and by dividing certain operations into stages. When these points are more thoroughly appreciated there will be a further reduction in surgical mortality.

The details of pre-operative preparation are given for the various types of operation requiring surgical treatment for diabetes mellitus, gastric ulcer and carcinoma, chronic jaundice, benign and malignant

conditions of the large intestine, acute abdominal conditions such as acute obstruction and acute appendicitis, acute pelvic conditions and diseases of the prostate. The advisability of combining radium treatment and surgery in certain instances and the status of anesthesia as a factor in surgical mortality are discussed.

The point is particularly emphasized that surgeons should appreciate the importance of good judgment in the selection of patients for operation, the proper preparation of such patients and the selection of an operation which may be performed without a fatal termination.

MILLER, R. G. The Incidence of Postoperative Catheterization in the Johns Hopkins Hospital. *A. N. S. J.* 9:41, 1963.

The cases reviewed were treated on the surgical, gynecological and urologic services and include practically all those operated upon between June 1, 1918 and February 15, 1920.

The operations are divided into fourteen groups and extensive record is presented. The results may be summarized briefly as follows:

Group	Operation	No. of Cases	Percentage of Total	Percentage of Total
1	Rectum	7	1.7	0.6
2	Perineum	90	22.5	8.0
3	Female Genitalia	3	0.7	1.0
4	Male Genitalia	45	11.2	3.6
5	Intestine	1	0.2	0.1
6	Bladder	7	1.7	0.6
7	Uterus	31	7.6	2.9
8	Abdomen (General)	31	7.6	2.9
9	Cholecystectomy	7	1.7	0.6
10	Appendectomy	100	25.0	9.0
11	Adrenal Gland	1	0.2	0.1
12	Testis	1	0.2	0.1
13	Prostate	3	0.7	1.0
14	Other	3	0.7	1.0

Catheterization was therefore done after operation in 12.38 per cent of the cases. A similar report of cases from St. Luke's Hospital made nine years previously gave the total percentage as 11.94.

Women are more liable to bladder disturbances than men as is shown by the figures in Group 8 in which the operations and treatment were the same. In this group 31 per cent of the men and 23 per cent of the women required catheterization. It appears that nervous irritability and bladder difficulties after operation are very commonly associated.

The percentage of white patients catheterized was 10.9 and of colored patients 12.1. The average capacity of the bladder is 400 c.c.m. The voided specimens are nearly always larger in amount than the catheterized specimens. Pushing fluids before operation and the giving of water soon after operation are both helpful in preventing cystitis. Bladder injury is more often due to trauma or external influences than to injury from the catheter. An important factor in the causation of cystitis is residual urine.

CLAYTON F. ANDERSON, M.D.

# ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Gartock J H Infections of the Hand *S & G* 6  
*& Obst* 1924 LXIX 65

This article consists of an analysis of 460 hand infections of all types and a discussion of the treatment and end results. In ninety seven (20.4 per cent) of the cases the condition was a simple abscess or cellulitis. These conditions are usually diagnosed without difficulty. The abscesses were treated by simple incision and the diffuse infections were treated conservatively with fomentations. The end results were good. In twenty cases there were simple subepithelial abscesses which cleared up when the detached epithelium was removed. Forty two cases presented collarbutton abscesses; subpermal accumulations of pus communicating through a narrow sinus with a deeper subdermal collection. The abscesses differ from simple subepithelial abscesses in that the surrounding areas of redness and swelling is wider there is induration at the region of maximum tenderness and the patient complains of a severe throbbing pain. The treatment consists in opening the superficial pocket and incising the sinus deeply enough to drain the deeper pocket. In two cases in this group legions of tenacious scars persist.

Of forty cases of paronychia twenty on were incomplete and sixteen complete. The former were treated by excision of the corner and side of the nail base and the latter by removal of the entire detached portion of the nail. Ridged nail resulted in three cases.

Carbuncles which may develop on any part of the hand containing hair follicles occurred in thirty eight cases in the series. These differ from simple abscesses in having multiple sinuses about a necrotic core and causing more marked extension and induration. In the treatment crucial incisions are made extending beyond the limit of infiltration and flaps are elevated from the underlying tissue. In only two cases was there a permanent functional disability which prevented the full use of a finger.

Felon or infections of the anterior closed space of the distal phalanx were found in sixty two cases. In this group the intense throbbing pain is important in the diagnosis. The distal phalanx is at first tense later it becomes indurated and tender and finally boggy fluctuant and insensate. The rest of the finger is usually not involved. Osteomyelitis occurred in one third of these cases. In many there was permanent disability and in two of these amputation was necessary.

Abscesses of the thenar and hypothenar eminences were relatively unimportant being found in only 3 per cent of the cases. All resulted from a direct puncture wound inoculation and all were controlled by simple incision.

In the five chronic staphylococcal infections in the series the continuation was due to a local

cause and healing occurred when the local cause was removed.

Suppurative tenosynovitis is a condition of extreme importance demanding early diagnosis and prompt intelligent treatment. In the forty two cases studied the original injury was so slight that it was overlooked by the patient. Severe throbbing pain is felt in the entire finger and hand the finger is held rigidly semiflexed and motion is very painful. The entire finger and the sides of the adjacent fingers are swollen tenderness is exquisite over the course of the tendon sheath especially over the proximal end and extension of the finger causes intense pain which is most severe at the proximal end of the sheath. The amount of systemic reaction depends upon the nature of the infecting organism.

In the treatment of these cases an Esmarch bandage should be used to obtain a bloodless field for operation a general anesthetic should be administered and the patient should be kept in bed until the infection is controlled. Lateral incisions are best and healing is more rapid if they are segmented. Sometimes however they must be made continuous in order to obtain adequate drainage. Drains are unnecessary and usually contraindicated. In the postoperative dressing great care must be taken to prevent secondary infection from without. Forlitt active and passive motion heat mechanical devices to promote mobility and careful dressing will aid in conserving the function of the fingers.

In some of the cases extension of the infection occurred to the ulnar and radial bursa and the thenar and middle palmar fascial spaces. Later complications consisted of sloughing of tendons osteomyelitis of the phalanges and suppurative arthritis. The incidence of tendon necrosis is proportional to the delay of treatment. In six of the forty two cases there was complete restoration of function but in the remaining thirty four there was some permanent impairment. In nine partial or total amputation was necessary.

There were twelve cases of suppurative ulnar bursitis. In eight the condition was an extension of tenosynovitis of the little finger and in four was due to radial bursitis. The diagnosis requires a knowledge of the pathology present before the extension occurred and proper evaluation of the findings. In three of these twelve cases the suppuration extended to the middle palmar space in five it ruptured proximally causing deep forearm abscesses and in four it extended to the radial bursa. In the treatment adequate properly placed incision are essential. Drainage is not necessary after the first twenty four hours. In four of the cases there was impairment of the function of the wrist joint and in seven limitation of motion in the fingers.

The twelve cases of radial bursitis four resulted from tenosynovitis of the thumb four from ulnar bursitis and two from infected traumatic amputations of the thumb. In four of these the condition extended to the ulnar bursa and in four

to the thenar space. In four others it ruptured at the proximal end of the sheath. In none was there permanent impairment of wrist joint function but in four there was some loss of mobility in the thumb. Seventeen cases of thenar space infection were cured without permanent impairment. In such cases an incision should be made over the first dorsal interosseous space parallel with the middle of the second metacarpal bone. An artery clamp should be inserted and the thenar space opened widely. A soft rubber drain may be used to keep the incision open until healing takes place.

Infections of the middle palmar space are frequently overlooked or incorrectly diagnosed. Loss of the convexity of the palm with only relative immobility of the fingers and induration and tenderness most marked over the anatomical position of the space are the diagnostic features. An adequate properly placed incision is extremely important. The method described by Kanavel is recommended. Recovery is usually prompt and in uncomplicated cases usually complete.

There were nine cases of deep forearm infection five due to extension from ulnar bursitis and four from radial bursitis. These abscesses develop between the flexor profundus and pronator quadratus muscles and extend along the interosseous membrane and intermuscular septa. As a rule the diagnosis is not difficult. Lateral incisions are preferable. Complete recovery resulted in eight of the nine cases.

Secondary osteomyelitis was present in twenty-nine cases. In twenty-one it developed in the distal phalanx as the result of a felon and in eight was secondary to tenosynovitis. In four of the latter amputation was necessary. The diagnosis is based on the history, the course, the presence of sinuses, the demonstration of bare bone by probing and the X-ray findings. In the treatment conservatism is frequently advisable but extensive involvement demands amputation.

The cases reviewed included a total of extensor tendon sheath infection, total of palmar fascia infection and four of phlegmonous lymphangitis. Four of these patients died, one recovered with fair function and one recovered completely. The treatment consisted in multiple incisions, irrigations with Dakin's solution, blood transfusions and measures to maintain the fluid level of the body.

J. M. ZIMMERMAN, M.D.

### ANÆSTHESIA

Lundy J. S. The Comparative Value of Ethylene as an Anæsthetic. *J. Am. Med. Ass.* 1914, lxix, 350.

The author reports upon a series of cases in which ethylene was used for the induction of anæsthesia—one from the Mayo Clinic without routine blood pressure record and the other from Seattle, Washington with routine blood pressure records.

The properties and the method of using ethylene are described. The Seattle model of the Gwathmey apparatus is recommended especially for obstetrics. The advantages of ethylene include rapid induction of analgesia and anæsthesia with relaxation and without cyanosis. The importance of avoiding cyanosis is emphasized. The use of ethylene is not followed by prostration.

The disadvantages of ethylene are:

1. Its inflammability. This is no greater than that of ether.

2. Its odor. The unpleasantness of the odor may be overcome by adding an agreeable scent to the gas as it passes through the mixing chamber by using a dilute mixture of ethylene and oxygen for induction or by using nitrous oxide and oxygen for the induction of the anæsthesia and ethylene and oxygen for its maintenance.

3. Headache. This occurs also occasionally after nitrous oxide anæsthesia.

4. Nausea and vomiting. These are usually mild and of short duration.

5. Irritation of the respiratory passage. This is rare but may result from prolonged re-breathing.

6. Temporary inhibition of respiration. This sometimes follows the administration of a concentrated mixture of ethylene-oxygen following induction with nitrous oxide. Cyanosis develops rapidly but is overcome by the administration of oxygen.

7. Fœtal asphyxia. This occurs only occasionally.

Patients with acute peritonitis do not tolerate ethylene-oxygen without ether.

No one agent is satisfactory in every instance. Ethylene has a definite place of its own. It does not entirely supplant nitrous oxide and ether but on the other hand nitrous oxide and ether do not fulfill all of the requirements of anæsthesia.

In obstetrics ethylene may be blended with other anæsthetic agents to produce the effect desired at the different phases. For its proper blending the Seattle model of the Gwathmey apparatus is recommended. During the part of labor when the cervix is being dilated the author has found the action of nitrous oxide and oxygen more satisfactory than that of other agents. As the head comes to rest on the perineum and the pains are reinforced by voluntary effort a small amount of ethylene may be added to the nitrous oxide with good effect. As labor progresses the anæsthetic mixture may be changed to ethylene and oxygen only with about 15 per cent of oxygen. As the head is delivered a rather concentrated mixture of ethylene and oxygen (5 to 10 per cent oxygen) may be used. True anæsthesia can be produced quickly with this mixture the pains terminated rapidly and extensive lacerations avoided. The baby cries almost immediately after delivery.

The advantages of ethylene are most striking in cases which are poor risks. When a mixture of 75 per cent ethylene and 25 per cent oxygen is used patients who are poor risks relax satisfactorily.

In a study of 163 complete anesthesia records including records of the blood pressure etc it was found that there was some straining during operation in 19 per cent of the cases no postoperative vomiting in 72 per cent slight vomiting in 26 per cent and excessive vomiting in 0.5 per cent (one case). Shock developed in less than 3 per cent. At the close of the operation 82 per cent of the patients were in excellent condition although only 73 per cent were primarily good risks. The operations were those commonly performed in the field of general surgery.

The youngest patient operated upon was 16 days old and the oldest 82 years both were subjected to laparotomy. There were no anesthetic fatalities or near fatalities. Of the six patients who were desperate risks only two died following the operation. In the entire series of cases there were only six deaths during the convalescent period of two weeks, and none of these could be attributed to the anesthetic.

Baumann M. A Case of Death from Scopolamine (Scopolin m. todesf II) *Z. n. d. b. f. Ch. r.* 1924 11 3

The case reported was that of a woman 52 years old who was operated upon for hemorrhoids under local anesthesia induced with 2.6 cgm of pantopon 4 dmgm of scopolamine and 0.3 gr of novocaine. Two hours after the operation respiration became progressively slower but the pulse continued good. By means of artificial respiration spontaneous respiration was re-established after an hour but three hours later breathing again became slower and shallower.

Autopsy revealed no organ changes. Novocaine poisoning was ruled out by the late appearance of the intoxication and by the absence of characteristic symptoms of that condition. The pantopon could have had no more than an adjuvant effect. The conclusion was therefore drawn that death was due to respiratory paralysis caused by the scopolamine.

In the cases of two elderly women death occurred also a few hours after a difficult gall stone operation but in these cases either operative shock or inhalation narcosis might have been responsible.

On the basis of his experience the author advises caution in the use of scopolamine and recommends that it should not be used at all for small operations and for more serious operations the largest amount employed should be 4 dmgm instead of 6 dmgm.

SONNAG (Z)

Hillman O S. Splanchnic Analgesia *La. t.* 924 ccvii 9

Operations on the upper abdomen are attended with a high mortality chiefly because of chest complications and shock. The former are due to prolonged inhalation anesthesia and restriction of the respiratory movements and the latter to repeated harmful stimuli passing to the central nervous system by way of the semilunar ganglia and splanchnic nerves. It is to reduce these dangers that the author uses splanchnic analgesia.

The patient lies on his side with a pillow under the loin to prevent sagging of the spine. The first lumbar vertebra is then identified and on a level with and 7 cm external to the vertebra a cuticular wheal is raised with 1 per cent novocaine. Through this wheal a 12 cm needle is introduced and pushed upward at an angle of about 45 degrees to the median plane so that it rests in front of the vertebra. Here 3 cc of 1 per cent novocaine are injected. The needle is then withdrawn into the subcutaneous tissues its direction being changed so that it lies along the anterolateral aspect of the second lumbar vertebra and 15 cm of novocaine are injected. The same procedure is repeated on the opposite side. The splanchnic nerves and semilunar plexus being bathed by 90 cc of novocaine. Celiac blockage does not diminish the sensibility of the abdominal wall. Anesthesia is produced either by an abdominal or by a paravertebral field block. A first stage ether narcosis is also induced unless there is a definite contra-indication to general anesthesia.

The author has used splanchnic analgesia successfully in eighteen cases. He cites as its advantages that it may be employed when general anesthesia is inadvisable; it is associated with quiet respiratory movements; it does not cause shock and it is followed by less postoperative vomiting than the other types of anesthesia. The chief disadvantage of this type of anesthesia is that it requires more time and skill than other types but this is greatly outweighed by its distinct benefit to the patient.

GEORGE R. MCATNEY, M.D.

Labat G. The Induction of Splanchnic Analgesia *A. S. t.* 194 lxxx 161

Splanchnic anesthesia is applicable to surgery of the upper abdominal organs and kidneys and is especially valuable in cases which are poor risks. It is induced by the anterior route or better by the posterior route by depositing the anesthetic solution around the splanchnic nerves and semilunar ganglia which lie either on the disk between twelfth dorsal and first lumbar or the first and second lumbar vertebrae.

The site of the posterior injection is located by identifying the lower border of the twelfth rib and then selecting a point on this costovertebral line 7 cm from the mid plane of the body. If the rib is difficult to outline the injection level is determined by locating the spinous process of the first lumbar vertebra which generally passes across the body of that vertebra.

After the point has been selected the needle is inserted at an angle of 30 to 40 degrees for a distance of 10 to 12 cm until it is felt to glide along the anterolateral wall of the vertebra without scratching the peritoneum. If the angle is less than 30 degrees there is danger of injuring the renal pedicle or

transfixing the kidney and if it is more than 45 degrees there is danger of reaching the intervertebral foramen and entering the spinal canal. When the needle is introduced in a plane exactly transverse to the body there is no chance of wounding the renal pedicles as they lie the full height of one vertebra below the solar ganglia. The pleura generally lies so high that there is little danger of traversing it and there is no danger of puncturing the lung.

The patient is given a preliminary hypodermic injection of  $1/6$  gr. of morphine and  $1/300$  gr. of scopolamine one hour before operation and if necessary this is repeated at the time of operation. At the site of the posterior injection 40 c. cm. of 0.5

per cent neocaine with adrenalin are given on each side and 120 c. cm. are used for the anterior abdominal field block. The operation is then begun almost at once. Between the posterior and anterior anesthetized areas lie lateral zones of normal sensibility where all manipulations must be done very gently. Immediate unpleasant effects such as pallor, cold sweats and nausea are due to a decrease in the blood pressure but are neither common nor alarming.

Splanchnic anesthesia is recommended because it is followed by a better postoperative condition, less shock and less danger of pulmonary complications and because it leaves the liver and the central nervous system undisturbed.

GEORGE R. McALLIFF, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Mackee G M and Andrews G C Coolidge  
Tube Quantitative Variations (Am J Ro 1  
8 1 924 525)

Coolidge and Kearsley have demonstrated that the energy output from different Coolidge tubes operated under identical conditions shows considerable variation. A quantitative estimation was made by means of ionization, the most sensitive and most accurate method of measuring roentgen radiation. In the combined series of seventeen tubes of universal type (broad and medium focus) the extreme difference between tubes was 66.5 per cent without filtration and 12.9 per cent with filtration (3 mm of aluminum q in blunt point gap). Unfiltered roentgen radiation has been employed however for many years in heavy therapeutic doses estimated by the usual practical methods and has given results that show satisfactory uniformity.

The authors carried out experiments in an attempt to ascertain whether energy variations from different universal Coolidge tubes can be detected by skin effects. In the investigations different areas of skin of a number of subjects were exposed under identical conditions to mill erythema and epilation. Series of filtered and unfiltered rays and different tubes and checks of these tubes made with ionization measurements.

The reactions varied only slightly if at all and in each case the variation coincided with the variation of dosage as determined by the ionization method. The comparative biological reactions however were not nearly as great as would be assumed from the percentage variation of the different tubes. The ionization results obtained by the authors differed from those obtained by Coolidge and Kearsley. The latter determined a maximum intensity variation of 87.5 per cent with unfiltered radiation and of only 12.9 per cent with a filter of 3 mm of aluminum. The authors obtained a maximum difference of 37.8 per cent with unfiltered radiation and of 5.7 per cent with 3 mm of aluminum. Possibly this difference may be explained by unavoidable inaccuracies in the determination of the ionization measurements, differences in the location of the ionization chamber or the fact that lower voltages were used in these experiments than those used by Coolidge and Kearsley.

The authors summarize the results of their experiments and their conclusions as follows:

1. Ionization experiments with an ionization meter show considerable variation of energy output from different Coolidge tubes.

Experiments on the skin show a variation of output from different Coolidge tubes. However

judging from visible skin effects alone the difference is not great.

3. A difference of energy output amounting to 57.8 per cent (as estimated by ionization) causes very little difference in the visible cutaneous reaction.

4. The manufacturer should classify therapeutic tubes according to the ionization estimation of the energy output.

5. The indirect technique used by dermatologists in America is the most accurate yet devised and is sufficiently reliable for practical purposes.

APOLIN HAZEN MD

Sutherland C C Shadows of Calcified Areas in the Bony Pelvis (Rad 19 4 1 69)

In the X-ray examination of the kidney, ureter and bladder the roentgenologist encounters aside from the shadows of calculi in the urinary tract an interesting variety of ray-opaque bodies the nature of which taxes his diagnostic skill. Ray-opaque shadows in the bony pelvis outside of the bladder area are comparatively rare, excluding the small concretions that form in the veins and venous plexuses which are commonly reported as phleboliths and are evident in about 37.6 per cent of cases. Such shadows have been noted in the Mayo Clinic during the past five years in only 0.014 per cent of the total number of examinations. Masses of foreign material in the bowel particularly remnants of barium remaining from the enema or the ingested meal may cause shadows resembling those of calcified tumors but a reray after thorough evacuation of the bowel contents will reveal their true nature.

The author collected fifty roentgenograms of fifty patients showing ray-opaque shadows in the bony pelvis; only thirteen of the fifty patients had been operated upon. A comparison of the roentgenograms with the surgical findings was made in an attempt to establish the characteristics of different types of tumors. Of the thirteen patients operated upon eight had had fibromata of the uterus, one a fibromyoma of the left ovary with corpus hemorrhagicum of the right ovary, one a partially calcified pyosalpinx containing putty-like material, one an ovarian dermoid containing rudimentary teeth, one calcification of the ovary and one a diverticulum of the bladder containing a calculus.

Wakeley C P G Some Actions of Radiations on Living Tissues (Brit J Surg 1924 20 135)

Observation of the hands of persons working with the X-rays or radium confirmed the conclusion that with one exception radium and X-ray dermatitis are exactly similar both clinically and histologically.

logically. The exception is the subungual hyperkeratosis seen in radium dermatitis.

In experiment the author studied the effect of radiation on the developing chick embryo and the skin of the frog tadpole. When the irradiation was given before incubation and for several days thereafter (eight days in all) its effect was inhibitory and depended more on its quantity than on its quality. When incubation was allowed to proceed for ninety hours before radiation and then X-ray exposures were given for three successive days the effect seemed to be one of stimulation. These investigations are still going on.

The skin of tadpoles given varied doses of the X-rays as examined histologically. No changes were noted except after the largest doses when there was a slight but definite hypoplasia. Irradiation in the presence of colloidal silver caused much more rapid and profound changes.

The destructive effect of the X-rays and the gamma rays of radium on the endothelial lining of the blood vessels on the blood cells (especially the lymphocytes) and on the mucous membrane of the intestines are known and must be taken into consideration in outlining treatment. The blood of persons who work with radium and the X-rays should be studied at frequent intervals.

Wakelen made histologic studies also in cases in which specimens of malignant neoplasms were obtained before and after radiation. In every case there was a marked fibrosis after radium treatment and in one case the cell showed signs of degeneration.

No single theory can explain all of the phenomena due to radiation. Probably one of the effects is a disturbance of the colloid equilibrium of the cell with consequent devitalization. If this is not carried too far the cell may recover but if it exceeds certain limits the damage is irreparable and the intracellular enzymes then complete the destruction of the devitalized cell protoplasm.

CH. E. H. HECKM. MD

Minot G. R. and Spurling R. G. The Effect on the Blood of Irradiation Especially Short Wave Length Roentgen Ray Therapy. *Am. J. M. S.* 44: 1-5

The authors review the literature on the effects of radiation on the blood and give a bibliography of seventy-eight references. All observers agree that following radiation there is a reduction in the number of white cells especially the lymphocytes.

The basis of the authors' study was fifty-six treatments given to forty-two patients. Particular attention was paid to twenty-two cases given thirty-six intensive short wave length treatments. In every case the clinical diagnosis was malignant neoplasm and in most instances the growth was believed to be a carcinoma.

Leucopenia and lymphopenia were observed. When short wave length was used the changes were more rapid, marked and persistent. On the

average the lowest count occurred on the sixth day. The leucopenia usually persisted for nine days, its longest duration was thirty-one days. Repetition of the treatment before the leucocytes have returned to and remained at their original level for some time caused a more pronounced and prolonged leucopenia and lymphopenia than that following the first treatment.

Other blood changes noted were: (1) an eosinophilia occurring from two to three weeks after the deep therapy; (2) the appearance of many degenerated forms of white cells especially in the first three days; (3) an increase in the immature white blood cell and (4) a slight increase in the platelets after radiation followed by a decrease. No important change was observed in the erythrocytes or hemoglobin. In one patient the platelet dropped to 100,000 per cmm. Combined with leucopenia this decrease in the platelets may be an index of greater bone marrow depression.

At least three factors seem to influence the intensity and duration of the blood changes: (1) the condition of the blood at the time of irradiation; (2) the size, intensity and character (wave lengths) of the dose administered; (3) and the surface irradiated. The greater the surface area irradiated the greater will be the effect on the white blood cells.

While depression of the lymphatic and hematopoietic systems is undesirable it seems to occur without a detrimental effect and is offset by the benefits derived from the irradiation. The authors conclude that a white cell count should be made before X-ray treatment especially if a previous treatment has been given. If the white cells are fewer than 5,000 per cubic millimeter a more complete study of the blood-forming tissues should be made. Then in deciding whether or not to treat the patient it must be determined whether the benefits of treating the lesion will more than offset the probably serious damage to the hematopoietic system.

C. R. E. H. HECKM. MD

Stettner K. Combined Roentgen Treatment of Surgical Tuberculosis Is (Zur Kombination von Röntgen- und chirurgischer Tuberkulustherapie). *Dtsch. M. d. H. S. A.* 79: 241-7

The author discusses the results of the treatment of tuberculosis of the bones, joints and soft tissues in the adult. Cachectic patients were first strengthened by general treatment because roentgen applications are detrimental to the weakened organism. Joints were immobilized. Allergy was tested to arrive at the prognosis. Marked allergy nearly always indicates that the prognosis is good.

The raying was done every three weeks, first with doses from one-fifteenth to one-tenth the erythema skin dose and later with stronger doses up to one-fifth the erythema skin dose. To obtain homogeneous radiation of the joints a wooden trough filled with moist sawdust to form a cube or rhombus of known diameter was used.



The raying was supplemented by inoculation by Ponndorf's or Moro's method or with old tuberculin. Hospitalization for several weeks was necessary. In cases of tuberculosis of the soft parts the duration of the treatment ranged from six to eight weeks. In cases of tuberculosis of the joints it ranged from five to six months. Healing occurred in 55 per cent of the cases of bone and joint tuberculosis and in 80 per cent of the cases of tuberculosis of the soft parts.

CARE (Z)

Stenstrom W. Experience with a Water Cooled X-Ray Tube for Deep Therapy. *J C C R* 1924 9:24 8

One of the first water cooled roentgen ray tubes capable of handling as much as 50 ma at 250,000 volts was furnished the State Institute for the Study of Malignant Disease at Buffalo, N. Y. and has been used for deep therapy work there since the beginning of this year under the following running conditions: 200 kv peak 30 ma 0.43 mm copper filter. The installation running conditions and arrangements for treatment are briefly described.

The tube has been running as long as six hours a day and for more than one hundred and fifty hours altogether without any change. It has never given any trouble, it is easy to handle and it runs with less relative fluctuation of voltage and current than the 8 ma high voltage Universal type tube.

Measurements with ionization chambers have shown that nearly the same effective wave length and the same depth dose are obtained with 30 ma as with 8 ma, that the distribution of the radiation at a focus skin distance of 4 cm or more is practically the same for the water cooled tube as for the Universal tube and that 100 ma min obtained with 30 ma produce approximately the same roentgen ray radiation as 75 ma min obtained with 8 ma.

Up to the present time there has been no indication that better results are obtained with long treatments than with short ones. The improvements which usually follow from one to two months later seem to be about the same for 30 ma as for 8 ma. It has not yet been determined whether the clinical results will be better or worse after the short intense treatments given with this tube than after those requiring a longer time but the roentgen ray sickness immediately following the treatment is less. The erythema of the skin is produced by a slightly smaller dose as measured by the ionization chamber when 30 ma are employed than when 8 ma are used.

ADOLPH HARTUNG M.D.

Mitchell H. W. Handley S. Cooper G. and Others. Discussion on the Clinical Results of Deep X-Ray Therapy. *P. Roy Soc Med Lond* 1924 xvii Sect Ele 10-Thrap 3

Mitchell based his remarks upon 33 cases treated during the past year. Forty-eight of these were hopeless and forty-one were cases of post-operative recurrence. While the cures were few practically all except the cachectic patients received

temporary benefit and relief from pain. It appeared that the condition of cachectic patients was made worse.

HANDLEY cited three cases of failure in which some degree of success was expected and one or two cases in which good results were obtained when failure seemed certain. He believes that the medium dose between that which is inadequate for an effect on the growth and that which is harmful to the patient has not yet been determined exactly.

COOPER stated that deep X-ray therapy has proved more beneficial in malignant disease than any other non-operative measure. Factors that influence the response to radiation are the amount of metastasis, the situation of the growth, the patient's condition (especially the condition of the blood), the nature of the neoplasm and the amount of radiation given. The best results had been obtained in the treatment of genitourinary conditions, pelvic conditions, primary glandular enlargements and carcinoma of the parotid and thyroid glands.

KNOX cited the case of a man who had been operated upon for the removal of a carcinomatous testicle. Later a large abdominal metastasis developed but disappeared under deep X-ray therapy. Still later (one year ago) large metastatic recurrences which developed in the neck and mediastinum and were associated with pleural effusion responded well to radiation. Today six years after his operation the patient is able to work. Knox believes that rays of lesser potency than those directed on the original growth have a stimulating effect on any secondary growths they may reach. He reported a case supporting this view.

MORTON and FINZI both favor the single massive dose. Morton and Finzi stated that in their opinion too much stress is being laid on possible damage to the blood cells. Finzi uses chlorotone to prevent radiation sickness.

MARIANDALE attributed the low incidence of radiation sickness in her cases to the fact that the patients are prepared in the same manner as for an abdominal operation.

TURRELL expressed the opinion that at the menopause deep X-ray treatment for fibroid is contraindicated. He believes that small repeated doses are less apt to injure the endocrine glands.

CHARLES H. HEACOCK M.D.

Wood F. C. Limitations in the Radiotherapy of Cancer. *J C* 1924 11:56

Of late years there has been a cactus to the program with which adjuvant therapy as at first received. This belief is even widespread that the treatment is useless. The author summarizes some of the limitations for the medical profession in general from the viewpoint of the radiotherapist as follows.

The reaction of a neoplasm depends upon the amount of radiant energy that can be delivered to it.

There is no evidence to show that short wave lengths are more effective than the longer ones but they can be delivered to deep lesions with less injury to the superficial structures. In accessible tumors the necessary amount of radiant energy can be most easily delivered by the insertion of radium.

2 Some persons bear radiation badly. Certain neurotic persons experience such an exaggeration of the usual symptoms of radiation sickness that their general condition is made worse. In the cases of cachectic patients the treatment is often fatal because of the effect of scattered radiation on an already fatigued and poorly functioning bone marrow. In these cases of neurotic patients only light radiation should be given for its palliative and psychic effect.

3 Radiotherapy is limited by the site of the tumor in relation to other important structures of the body. For example it is difficult to radiate a cancer of the stomach without inflicting serious injury on the liver pancreas adrenal or sympathetic system.

4 The biology of the tumor influences the results of radiotherapy. While a few general rules may be drawn regarding radiosensitivity it is impossible to say definitely what the response of a given tumor will be. There is no such entity as a cancer or a sarcoma dose therefore at the present time all radiotherapy is largely empirical.

In conclusion Wood states that while surgery should be the treatment in all cases of operable malignant tumors it is just as emphatically true that radiation therapy should be the method of choice for all cases of inoperable neoplasms as partial surgery is worse than useless. The present field of radiation is the palliation of inoperable tumors and postoperative prophylactic treatment. The results are often so good that we may look forward with confidence to greater achievements in this direction.

CHARLES H. HEACOCK, M.D.

Cameron A. T. and McMillan J. G. Roentgen Ray Sickness and Chloride Retention. *Can. J. Biol. Sci.* 1924. 69.

Roentgen ray therapy in massive doses produce a definite lowering of urine excretion and a definite chloride retention when the epigastrium is rayed. Radiation of other parts of the body produces a less marked effect.

When epigastric radiation is given in cases in which the previous chloride retention was low the tendency to sickness, greater other factors being equal.

Preliminary feeding with sodium chloride daily to raise the chloride excretion to 10 gm. or more per day before treatment is begun and continued feeding during the treatment prevents or lessens the sickness.

The blood chlorides are not invariably affected but sometimes are decreased.

Several illustrative cases are cited.

CHARLES H. HEACOCK, M.D.

## MISCELLANEOUS

Von Schroetter H. Recent Studies on the Effects of Light and Heat on the Organism. A Critical Review (Neuere Arbeiten ueber die Wirkung der Licht und Waermestrahlen auf den Organismus). *Kritische Revue* 1923 XVI 96.

Sonne demonstrated that the heating of the blood in the subcutaneous tissues is caused chiefly by the visible light and that the ultraviolet rays are absorbed by the superficial vascular layers of the skin. Therefore the thermic effects of these two types of ray differ according to the depth of the layer.

The results obtained in animal from a light bath (a rise in the general temperature of as much as 2 degrees) are applicable to man only when the normal heat regulating apparatus is disturbed.

In judging an isolated effect it must be borne in mind that 35 per cent of the visible light and of the inner infra red is lost by reflection while the outer infra red is entirely absorbed. Sonne ascribes a greater value to the action of the thermic light bath than to the chemical action of the ultraviolet rays. By means of the first the skin temperature may be raised as much as 48 per cent and the blood temperature increased. The result is an increase in the cellular processes, a weakening of the toxin and antigen activity and the production of immunizing material as in fever but without an increase in the general body temperature. In animal experimentation a long application of light caused a partial destruction of diphtheria toxins and increased the production of typhus agglutinins.

In contradistinction to these and similar reports made by Hansen the author is of the opinion that the ultraviolet rays are the most important biologically but are essentially improved in their action when they are combined with the thermic rays.

Accordingly sunlight offers the very best mixture of rays. This is nearest approximated by the Kohlenbogen lamp.

Richtel Jr. reported that insects died when placed in a glass globe and when they were subjected for a short time to a dark dry heat of from 40 to 42 degrees C.

Young animals and animals previously rayed show greater resistance and this resistance can be transmitted by means of blood transfusion. Immunization can be obtained by gradual and continued exposure. In unrayed animals high temperature leucopenia may be set up by injecting the blood of rayed animals.

According to Richtel humoral reactions are factors in the causation of heatstroke. When these occur in fever following an infectious disease they may be looked upon as the natural reaction of the body and are to be combated only when they are long continued and the temperature rises above 85 degrees C.

The destructive results of overheating should be treated with camphor and caffeine not by other morphine, adrenalin or cold.

DIETL (2)

Dahlfeldt C. Rational Dosage of the Stimulating Ultra Violet Rays (Zentralblatt für Dermatologie und Syphilis 1923 175)

The dosage of ultraviolet light according to time and distance that has been employed up to the present time in no way meets the need for a generally useful dosage. Because of the consideration that must be given to dispersion and to the difference in the efficiency of the same source of light and of light from different lamps this requires a complicated reckoning. To establish uniformity of dosage the author proposes to take the relative intensity as a number showing how many times stronger or weaker the intensity becomes when under similar conditions the distance is altered from 100 cm to some other distance. The product of this number and the time of radiation gives the physical dose. The relative intensity  $I$  (corresponding to a distance of 100 cm) applied for one minute makes one minute unit ( $MU$ ). The number of these minute units shows how many minutes we must irradiate at a distance of 100 cm in order to obtain the dose which is given by an irradiation of another relative intensity and another length of time.

The question as to whether or not the number of minute units runs parallel with the degree of skin reaction has not as yet been determined absolutely. Unlike Juengling the author holds that only slight and moderate erythema can be compared accurately.

Under conditions which eliminated so far as possible all technical source of error a comparison was made of small skin fields lying together in the form of a square of which those situated diagonally received the same dose. When the minute unit was unchanged the skin reaction was the same irrespective of the time of radiation. Such observations must extend over several days as in severe erythema the final degree of reaction is established only after from three to five days.

For general irradiation in practice relative doses of 1, 2, 3 and 4 at a distance of 14, 100, 70, 53 and 50 cm are sufficient and for local irradiation relative intensities of 10, 30 and 40 at a distance of 32, 22, 18 and 6 cm are indicated. Errors up to 10 per cent in the time of radiation are negligible like the difference in person with the quartz light which according to Dornow is negligible up to 18 per cent. It is advisable to vary the relative intensity according to the desired number of minute units in order to keep the radiation time from being too short or too long.

To describe the new dosage further the reaction unit of the skin is defined as the relation between physical dosage and skin sensitivity. With the aid of a patient from six to twelve small fields somewhat lateral to the umbilicus were irradiated under the same external conditions with increasing dosage. The reaction unit  $ER$  is the weakest reaction in which the borders of the streaks are recognizable. The number of minute units necessary for the pro-

duction of the reaction unit is called  $B_{10}$ . On the basis of studies of the sensitivity of the skin the author gives as a primary dose for the anterior surface of the body  $1/B_{10}$  and as a primary dose for the posterior surface  $1/B_{10}$ . In order to draw a correct conclusion regarding the erythema changes in general irradiation a small control field is sometimes left covered. Where there has been previous radiation the initial dose is higher.

Because of its certainty the new method has been found of considerable value in stimulating the effects of ultraviolet light. (Diehl G.)

Gurain Str H J. Popular Lecture on the Sun Cure. Brit Med J 9 4 11 234

The author discusses the dangers of treatment by heliotherapy rather than its advantages and explains the action of sunlight. He classifies the dangers in two groups: (1) those due to carelessness or ignorance and (2) those due to unsuitability of the subject.

The most obvious dangers due to carelessness or ignorance are sunstroke, heatstroke and sunburn. Sunstroke is produced by local heating of the brain and general heating of the body while heatstroke is caused wholly by general heating of the body. Because the circulation of the blood is not sufficient to distribute the radiant heat received locally the head and spine must be protected. Heatstroke is the result of fatigue of the sweating mechanism on which in hot atmospheres the heat regulation of the body depends. It can be warded off by artificial sweating and by wetting the patient with a spray and cooling him with a fan. Sunburning may contribute to the onset of sunstroke or heatstroke by making the subject ill through the absorption of the products of damaged tissues. Sunburn should always be avoided.

Dangers due to unsuitability of the patient are more difficult to describe and in some cases can be ascertained only by complicated tests. Persons who do not become pigmented should be exposed only under medical care. Albinos are not suitable for sun treatment. Theyoung the aged and infirm and persons suffering from any illness or organic disease should be given sun treatment only by those expert in this type of therapy.

Certain precautions are always necessary. The feet should be exposed first and the rest of the body exposed gradually. Full exposure should not be permitted before the end of a fortnight. Eventually a total exposure of from two to three hours a day may be allowed but the head should always be protected. The patient should never be too hot or too cold. Blistering should be avoided and exposure should be stopped short of fatigue and followed by a feeling of well-being and exhilaration.

Properly planned sunlight treatment may be of benefit in three ways.

1. By its psychological effect. Sunlight has a powerful stimulating and tonic action tending to banish mental depression.

2 By its local or direct effect Sunlight has a powerful direct bactericidal action a property possessed especially by the ultraviolet rays However as these rays have very little penetrating power their bactericidal action is limited to organisms on the surface of the body

3 By its indirect or remote effect Ultraviolet rays increase the power of the blood to destroy pathogenic organisms favor the repair of diseased bony tissues by stimulating calcium metabolism prolong life in cases of disease due to vitamin deficiency and cause pigmentation of the skin The visible rays of longer wave length have a greater penetrative power pass through the skin and are absorbed by the blood their energy being converted into heat The infra red rays which have a still greater penetrative power produce local congestion and thermal effects

In conclusion Gauvain says that in heliotherapy we have a potent method of stimulating cells of profoundly modifying the properties of the cells composing the body and of arresting or preventing disease

EMIL C PODITSHEK M D

Schwartz R P Heliotherapy B I N & S J  
1924 CXCI 243

Thirty three years have not produced universal confidence in the use of tuberculin in the treatment of any form of tuberculosis

Heliotherapy has clinically proved the indications for its use on the basis of general changes the prevention of deformity and the restoration of function in the affected joint providing fundamental orthopedic requirements are met

High altitudes have a beneficial effect but excellent results are obtained at the seashore At either level clean clear air and sunshine

Systematic graduated exposure of the entire body except the head with careful observation of the patient as the period and extent is increased seems to be of fundamental importance

Clinical observations and laboratory investigations at present favor the opinion that the therapeutic value of the solar spectrum is due not to the effect of any one part but to the combined effect of the entire spectrum

Artificial sources of light should not be accepted until it is proved that they reproduce the solar spectrum in extent and intensity

During the acute stage the local lesion in the bone or joint should be completely immobilized Apparatus is indicated but must not interfere with insolation Plaster of Paris jackets and casts should never be used in the treatment of tuberculosis of joints but the affected joints should be kept immobilized during the entire period of the acute inflammation and then freed from fixation gradually The amount of motion attempted should be determined by the amount of local reaction Long continued immobilization is responsible in a large measure for the loss of function of the joint which so frequently occurs Tuberculous abscesses should be drained Sinuses and ulcers should be unbandaged for twelve hours each day and subsequent treatment should favor the restoration of function

Surgery must be looked upon as occasionally essential in osteo articular tuberculosis but its wise use depends upon knowing when conservative measures have reached their full potentiality in the particular case

Heliotherapy combined with rest in bed fresh air good food etc has arrested the disease process in about 95 per cent of cases of joint tuberculosis

CARL J (LASEL M D



## HOSPITALS MEDICAL EDUCATION AND HISTORY

Flagg, P. J. A Scientific Basis for the Use of Color in the Operating Room. *Med. & Hosp.* 1924, v. 11, 555.

Reflection from a white surface constitutes a serious difficulty which has increased as the use of artificial light has taken the place of daylight. While a white operating room suggests cleanliness and asepsis and has a pleasing aspect it has been found scientifically and physiologically incorrect. Suggestions bearing upon necessary deviations from white have come from various classes of persons—surgeon, medical man, architect, interior decorators and stage lighting experts. Some of them represent the view of persons interested in the ensemble of the operating room (view aesthetically and psychologically) and other the of person interested in the operating room as a laboratory with interest focused upon the field of operation (physiologically or

physiological). As the operating room is merely a setting for the patient and the field of operation the physiological point of view must predominate.

The difficulties presented by the field of operation are three: illumination, reflection and color fatigue. As operations are to last only rarely performed by the exclusive use of daylight, the problem of supplying daylight for the operating room has passed. The operating room may as well be in the basement of the building. The ordinary Mazda light with yellow rays is better than the so-called daylight bulb.

Maximum illumination may be obtained and reflection and color fatigue may be overcome by employing the color which is complementary to the operative field—a definite bluish green. The color of the operative field has been determined as equal to about 60 per cent oxygenation (oxyhaemoglobinometer Flagg). Therefore the recommendation is made that the floor, wainscoting, tiling and furniture of the operating room and all draperies, gown, gauze, etc., be of this color. CARL R. STEINKE, M.D.

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The tr tment of cinoma of the lip V L YOCUM Jr U l & C tan Re 1924 xxvi 458

The med c f asp t of oral d gn is W W DUKE Internat J O thodont Oral Surg & Rad ography 19 4 x 404

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Oral sep a d thepos b lity f i t p e t ion ev w of the results f n t g t i n f th i s t enty yea with r l e r e t the r f i on h p between d tal fect a d co st t i l d e H ALLERLAND Zt ch f St m al f 1924 xxii 196

The import ce f i c i f fect on th mouth f m d t t t w p oint L W ORL Atlant M J 9 4 xxxi 76

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### Pharynx

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## SURGERY OF THE NERVOUS SYSTEM

### Brain and its Coverings

Brain and its Coverings  
 J. W. A. R. C. Soc Med 1944 21 101 849

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Proc. Roy. Soc. Med. Lond. 1924, x, 1, Sect. C, 45, D.  
Child, N. and Olst, J. (1925) J. Orthop. 14, 571.

The physical treatment of the student is held in the  
 isolated cell in the  
 Texas State Jail 1924 x 35

The report of a case of infantile hemiparesis with alternate paralysis (pseudotumor) is presented. The patient, a 14-month-old girl, had a history of convulsions and was found to have a right hemiparesis. The diagnosis was confirmed by a CT scan of the head, which showed a right parietal mass. The patient was treated with anticonvulsants and the mass was resected. The postoperative course was unremarkable.

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A comparison of the brains of all cases with previous records to date is a detailed presentation of the cases and specimens. See also the list of cases given in 1974, p. 534. [58]

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### Peripheral Nerves

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Sympathetic Nerves

### Sympathetic Series

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simulating a pulmonary tumor in child V F CARDÓ  
ANAYA An F C de med Uni Mont de 94 ix  
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Foreign bodies in the air and food passage in infant and  
child with especial reference to the clinical diagnosis  
of the condition R S KOWLA N Am J Dis Child  
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## SURGERY OF THE ABDOMEN

## Abdominal Wall and Peritoneum

Rupture of the right rectus abdominis muscle  
R I HARRIS Canad M A S J 94 x 39  
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L C ROSENBERG J Am M A S 94 lxx 686  
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l 738  
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H B SUTTON N York St J M 94 xlii 78  
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E ANDREWS Ann Srg 924 li 22 [466]  
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Ann Surg 94 lxxx 4 [466]  
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abdominal hernia L F W TSO Ann Surg 924 lxx  
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J CARLES J Med d Brd u 94 49  
Typical cases complicating the treatment of  
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ILLINGWORTH Med J Australia 94 u 6  
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ileum and sigmoid colon D O E SC LAEGEL Zentralbl  
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Therapeutic value of charcoal in flatulence and eructa  
M L BOVMA B St N M & S J 924 cx 42  
The modicum of intestinal putrefaction in the  
digestion F W WHITE J Am M A S 94 lxxx  
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Focal infections chronic gastro-intestinal infection  
A F R ANDRESEN An Cl M d 94 36  
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W H GALT Ann Cl Med 94 149 [467]  
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W STERBERG Lep v g l 94  
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P lin Rom 94 xii se pr t 008  
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G EVEN Pessamed P 94 LXXX 579  
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J A LEPAK Minn Med 1924 u 555  
The etiology of intestinal obstruction E M JONES  
Minnesota Med 924 u 548





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and Coll. U C R R R A H H Soc f o t e t d g y n e  
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D r a y G y n e e t b t 1924 22 519

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#### Adnexal and Periluterine Conditions

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